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Event Opal Monitors
Maxim Park: Live
And More!

Game Sound Special

Music • Sound Design • Technology

Special Supplement

Microphone Buyer's Guide

A NEWBAY MEDIA PUBLICATION

WORLDWIDE EDITION
ISSUE 224 • JULY 2009 • UK £3.80

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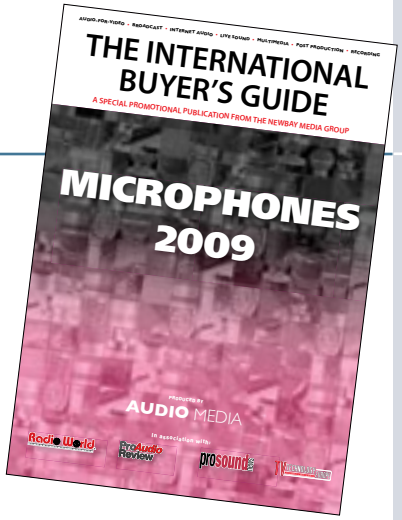
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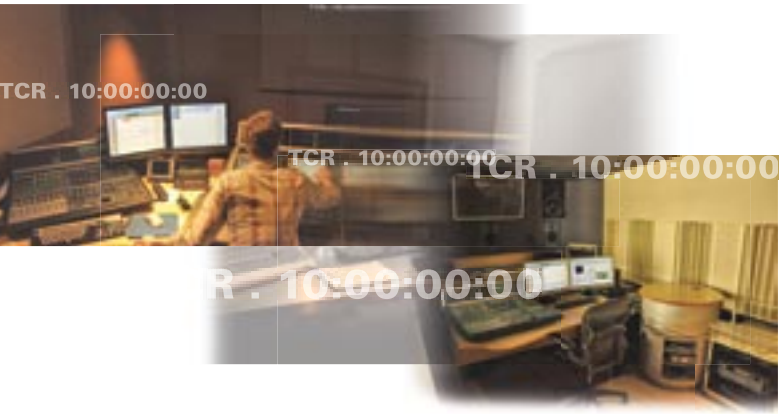

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leader

Foresight is not always a wonderful thing. Uncertainty is one of art's significant building blocks. Music, for example, often relies on an unexpected or unconventional twist; and books would be wholly uninteresting if the second half was a foregone conclusion. The horror movie genre leans heavily on uncertainty – a reliance on special moments when the audience may or may not receive a jolt. The odd thing is that a good horror movie, book, or piece of music can be consumed more than once and not lose its appeal. Thwarted expectations are still possible even though you know what's coming next.

The key to this is mostly manipulation of emotions, or contravention of convention. In music we tend to expect certain things of a chord progression, or a structure, or an arrangement. If those expectations are heightened by adherence to the formula up to a point, then even if you know the direction will change, you can still be wrong-footed when it happens. Then there's emotion...

In horror there are conventions of blind corners, close-up camera shots, and darkened crevices, but these alone are not enough to repeatedly succeed. This is why music is so important here – it's an unrivalled emotional manipulator. You can be forced into apprehension by a perfectly judged build-up no matter how many times you experience it. On the other hand, if it's not perfectly judged, the moment and maybe even the movie, will fall flat.

Visceral Games' Don Veca, the Audio Director on *Dead Space* (page 28) had to analyse the horror genre and the phenomenons of fear, suspense, and surprise to the point where he could get a computer to do it with sound. For both music, and an eerie ambience track that one could argue is part of the music as well, he had to develop an insight and theory of sound for horror that enabled the development of the emotional equivalent of an automatic gearbox.

I would argue that this analysis – the idea that the unseen and the unforeseen must influence what is present and what is on screen – gets right to the heart of what makes the difference between fail and pass, mechanical and creative, in audio post production – in any media, for any medium. The Games Special this month is not just for games professionals – I think the dialogue between different media types is a very important way for all audio practitioners to move the craft forward.

Next month is the time for our annual Equipment Guide. If you're a manufacturer, you should have received your instructions already. If not, or if you haven't done anything about it yet, please get onto it. You know who you are...

Paul Mac, Editor

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AUDIOMEDIA

www.audiomedia.com

AUDIO MEDIA (Europe), 1st Floor, 1 Cabot House,
Compass Point Business Park, St Ives, Cambs, PE27 5JL.
Telephone: +44 (0)1480 461555 – Facsimile: +44 (0)1480 461550

General E-mail: mail@audiomedia.com – Press Release E-mail: pr@audiomedia.com

Managing Director
Angela Brown
a.brown@audiomedia.com

Associate Group Publisher
Nick Humbert
n.humbert@audiomedia.com

Editor In Chief
Paul Mac
p.mac@audiomedia.com

News/AMSR Editor
Paul Holmes
p.holmes@audiomedia.com

Production Editor
Lanna Marshall
l.marshall@audiomedia.com

Design & Production Manager
John-Paul Shirreffs
jp.shirreffs@audiomedia.com

Regional Sales Manager
Bob Kennedy
bkennedy@imaspub.com
+44 (0)1279 861264

US Sales Manager
Dave Carson
dcarson@nbmedia.com
+1 615 776 1359

Circulations Manager/ Administration
Jo Perriss
mail@audiomedia.com

Subscriptions
subs@audiomedia.com
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*Within Broadcast & Production

NEW PRODUCT

Klark Teknik

Klark Teknik has launched the DN530 Creative Quad Gate that Brand Development Manager Richard Ferriday believes brings "some exciting new tools to the audio party." A key feature is 'Transient Accenting', a new creative function providing an easy way to enhance the attack envelope beyond merely opening the gate. This can provide up to 12dB of additional transient energy to accent drums and percussion instruments. It can also be used to enhance the impact of acoustic stringed instruments such as guitar and piano.

www.klarkteknik.com

SSL X-Desk Now Shipping

SSL has announced that its new compact mixing desk, the X-Desk, is now shipping. The board fuses a sixteen channel SuperAnalogue summing mixer and a compact analogue audio hub together, while remaining small enough for easy transportation. The unit sports smooth 100mm faders and dim/cut buttons, plus stereo and mono aux sends, as well as channel and master bus inserts. Furthermore, a total of eight X-Desks, or X-Desk and X-Rack combinations, can be cascaded via D-Sub connection to provide up to 160 inputs.

www.solid-state-logic.com

Zoom R16

Zoom has released the R16 three-in-one portable digital recorder that claims to be "the first digital recorder with sixteen-track playback and eight-track simultaneous recording utilising Secure Digital (SD) memory." Wrapping a multi-track recorder, an audio interface, and a control surface into one lightweight package, the R16 provides further convenience by running on just six AA batteries. The SD memory enables 32GB worth of recording, equating to up to 100 hours of recording using all 16 tracks. Masa Iijima, CEO of Zoom Corporation commented, "We have learned a great deal from the success of our H2 and H4n, as well as HD8 and HD16, our past multi-track recorders. With the R16 we have brought the most important capabilities from each of these product lines into our design to make a unique and versatile music production solution." The mixer is able to integrate with most DAWs via USB to provide seamless transfer of audio, as well as tactile control over software parameters.

Zoom
+44 (0) 1462 791 100
www.zoom.co.jp

Apogee ONE

Providing a pocket-sized, affordable recording solution comes the new ONE, a USB music interface and microphone from Apogee. With a footprint only slightly larger than an iPhone, ONE squeezes an impressive amount of quality components into its sleek frame. The internal reference condenser microphone provides on the move recording and is supplemented by a balanced XLR microphone preamp with phantom power and gain range of +10 to 63dB. Also included is an unbalanced ¼-inch high impedance instrument input ideal for plug-in and play of guitars, bass, and keyboards. Rounding things off is a line-level, 1/8-inch stereo output for headphones or unbalanced powered monitors.

The interface is designed to work with Apple's Logic, Final Cut, or any Core Audio compliant application, and features 44.1/48kHz, 24-bit A/D and D/A conversion.

Apogee Electronics

www.apogeedigital.com

NEW PRODUCT

Audio Ease – Cabinet

Audio Ease's new plug-in, Cabinet, offers guitarists who may not be able to afford Speakerphone the chance to use the company's award winning convolution-based emulation processing. The sofware features five cabs from Speakerphone, a good live room, the best spring reverb, and a whole host of mic simulations.

www.audioease.com

NEW PRODUCT

Vienna Imperial

The Vienna Symphonic Library team has announced the release of Vienna Imperial, "the most realistic sampled piano ever created." All samples are taken from a Bösendorfer 290 Imperial outfitted with CEUS technology for precise and extensive audio sampling.

www.timespace.com

NEW COURSE

Ableton Live

SAE Liverpool, best known for training the city's foremost engineers and producers, has added a four week Ableton Live Course to its educational roster. The program will provide intensive hands-on experience with Ableton Live 8, plus use of Vestax's VCM-600 purpose-built controller.

www.sae.edu

NEW PRODUCT

SKB Mac Pro Tower Case

SKB has announced the release of the new 1SKB-R04WMAC Rolling Shockmount Mac Pro Tower Case designed to accommodate the powerful new Mac Pro Towers and Mac G5 Tower. The cases provide portability as well as shock absorbing protection.

www.skbcases.com

streaming news @ www.audiomedia.com

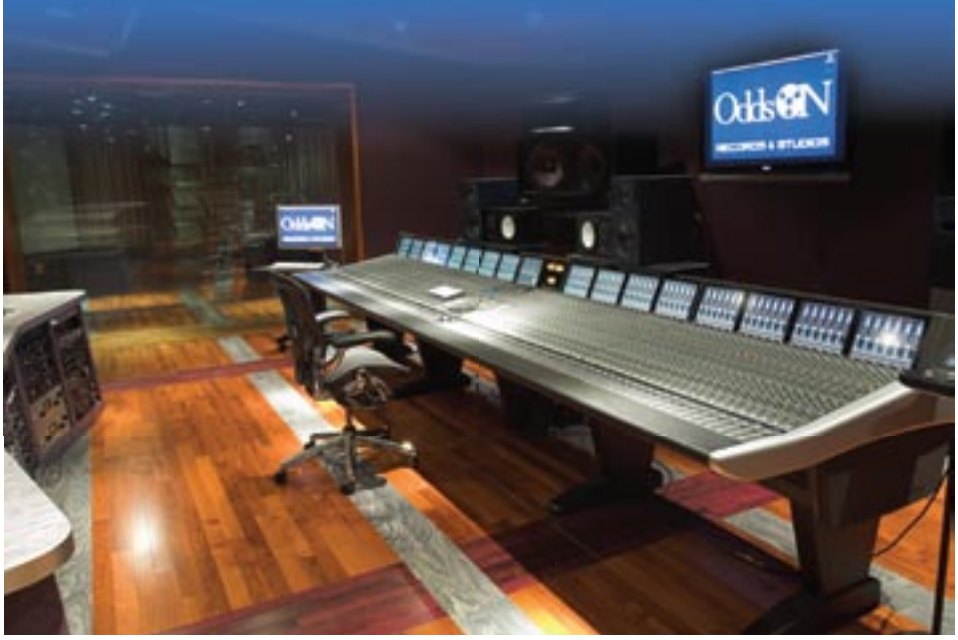
NEW STUDIO

Odds On Records & Studios

Las Vegas has a new recording jewel in its midst with the opening of Odds On Records & Studios, a two-million dollar multi-faceted recording facility boasting the biggest duality console in North America. At the heart of the studio's charm is a proud assembly of some of the finest vintage gear available, augmented by state-of-the-art recording equipment. Heading up the list is a range of restored vintage tube microphones from Bock Audio that includes AKG, Gefell, and Neumann models. These are joined by original LA-2A compressors, Focusrite/Neve era outboard gear, classic API audio products, and Blackface UREI compressors. High-tech gear comes in the form of Allen Sides' Ocean Way monitors, 40 x 80 Protools I/Os in each room, and Universal Audio A/D converters. The newly built tracking room also features a 96-input SSL Duality, with an 80-input SSL 9000 K console and an SSL Matrix installed elsewhere in the 12,000ft² building.

Ensuring that none of the innovative blend of vintage and modern gears' quality gets wasted is three-time Grammy award-winning James 'Bonzai' Caruso (Chief Audio Engineer and In-House Producer) and multi-platinum Engineer Sean O'Dwyer. Already building a strong reputation, Odds On has attracted A-list stars that include Alicia Keys, Akon, and T.I in recent times.

Odds On Records & Studios
+1 702 318 6001
www.oddsonrecording.com



Open Labs Makes LIMS Debut

Presenting for the first time at LIMS this year was American company Open Labs, who specialises in fully integrated production consoles with onboard computers able to run almost any Windows XP based DAW or plug-in.

Its newest product is the DBeat Pro, "the first professional studio that you can play as a musical instrument." Features include: 3.0GHz Intel Core2 Duo processor, trackball with two buttons, 4GB of memory, 320 GB of storage, twelve-inch resistive touch screen, and a high speed dual-layer 8.5GB/disc CD/DVD burner. Audio I/O options comprise 24-bit/96KHz recording with four in/six out that includes two phantom-powered PreSonus mic-pres with instrument inputs. Bundled software includes Open Labs Riff, Ableton Live 7, Reaper, and Guru.

Open Labs
www.openlabs.com

Abbey Road Launches Online Mastering Service

Abbey Road Studios has extended its audio expertise and enviable heritage to anyone with an Internet connection with the launch of a new service that provides online mastering directly from the world-renowned studio. Clients can take advantage of the studio's award winning engineers and a delectable range of hardware and software.

Hardware includes the EMI TG mastering consoles with the SADiE 5 PCM8 digital audio workstation, Benchmark A/D/As, and outboard from Prism, Weiss, Junger, SPL, and TC Electronics. 2GB of audio can be uploaded onto a secure server before making processing decisions, and the finished master can be downloaded in WAV, downloadable DDP Image File, or audio PMCD formats. Tracks can also be cut straight to vinyl (7-inch and 12-inch) or CD. CD mastering costs GB£90 per track with prices ranging up to GB£250 for an LP album.

www.abbeyroadonlinemastering.com

Melbourne-based Music and Effects, a Dolby licensed audio post-production facility, has recently undertaken an extensive upgrade project that includes the purchase of three Fairlight Constellation XCS systems. The facility boasts clients such as Arena Films, Melodrama Pictures, and Retro Active Films. Dual 3-Bay XCS desks have been installed into the main dubbing stage to work as either a seamless six-bay large format desk, or as two independent systems.

www.fairlightau.com

Diary of Events

July 14-16

Develop Conference

Brighton, UK

July 16-18

PALME Asia

Suntec, Singapore

July 17-19

NAMM Summer Session

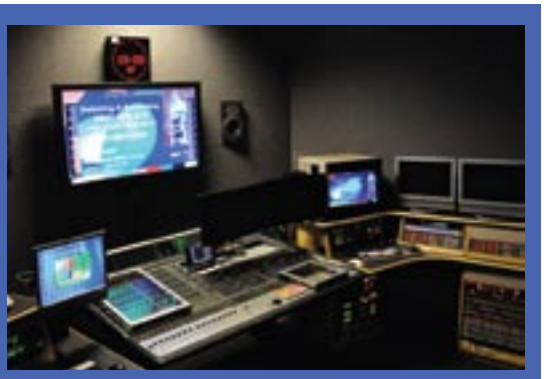
Nashville, USA

August 23-24

The PAL Showcase 2009

Toronto, Canada

BT Tower Gets Scrub-bed Up



Audio technology specialist Scrub has been called in to emerging production company BT Media and Broadcast to help upgrade its live and post production facilities. The new 5.1 dubbing theatre features Dolby E and Dolby Digital codecs, a DK Technologies MSD600 Jellyfish meter, and a new Pro Tools HD system with ICON D-Control ES console. The ICON will connect to the Avid ISIS storage at BT Media and Broadcast to achieve full media integration. Ben Nemes, Director of Sales at Scrub commented, "The set-up under Andy at BT Tower is as technologically impressive as it is demanding. The sheer amount of time-critical throughput makes the right kit, the right infrastructure, and the right knowledge from all concerned an absolute must. We are very happy to have been brought in to help."

HHB/Scrub

www.hhb.co.uk

Windows Wide Open for Neyrink's SoundCode for Dolby E

Neyrink has released version 1.1.3 of its SoundCode for Dolby E that adds support for Windows XP and Windows Vista, plus extra features for Avid Media Composer, Apple Final Cut Pro, and other media workstation system users. The standalone software can decode a Dolby E stream faster-than-real time to BWF files, as well as play back a Dolby E stream file in real time for auditioning using Core Audio or Windows MME sound hardware. Other improvements include an encoder capable of delivering multi-mono BWF files in addition to interleaved BWF files for direct import into Pro Tools and Pro Tools plug-in support for Windows XP and Vista.

Paul Neyrinck enthused, "I am very pleased to say that now we offer a solution for nearly everyone, no matter what system they are using."

Neyrinck Audio

www.neyrinck.com

Waves just keeps on churning out quality plug-ins and its latest bundle, the Grand Masters Collection, follows the tradition. Patching on ten new plug-ins to the original Masters bundle, the suite offers users "the precision and processing power they need for subtle or surgical manipulation of their mixes." In addition to L2 Ultramaximizer, Linear Phase Equalizer, and Linear Phase Multiband Compressor, the Grand Masters Collection now adds MaxxVolume, PuigTec EQP-1A, PuigTec MEQ-5, Waves Dorrough Meters, Stereo Edition, Waves Center, L3-16 Multimaximizer, L3 Ultramaximizer, L3 Multimaximizer, L3-LL Ultramaximizer, and L3-LL Multimaximizer plug-ins.

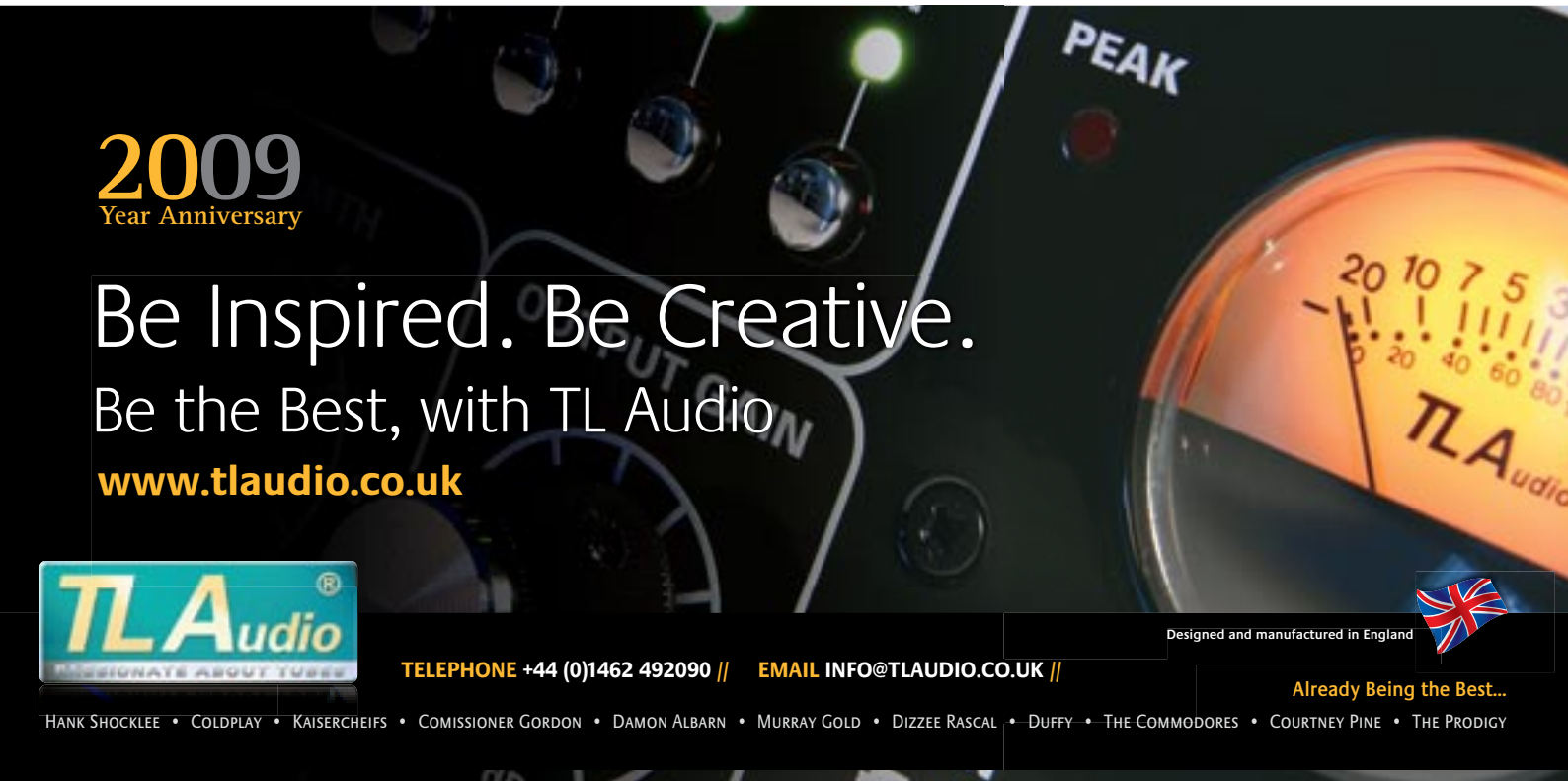
Waves Audio

+44 (0) 845 500 2 500

www.waves.com

After a two-year search, technical staff at Bristol-based post-production facility Big Bang Post has found the perfect solution for controlling its Pyramix DAWs. eMerging has supplied them with Smart AV's Tango console after Big Bang's Chief Dubbing Mixer Neil Hipkiss had almost given up on finding an economically viable solution. Hipkiss commented, "Until I saw Tango, I thought you had to pay five or six times the price for these kinds of features."

www.smartav.net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Chiyoda-ku, Tokyo 101-0032, JAPAN

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broadcast news

streaming news @ www.audiomedia.com

Schoeps Launches ORTF Surround

Schoeps has released its ORTF Surround recording method, a new plug-and-play solution for picking up surround ambience in live sporting events and film sound. The new windscreen and suspension provides strong 360° imaging with a "pleasant, natural-sounding spatial impression." Four Schoeps CCM 41 L supercardioid mics are used as part of the set-up. The ORTF Surround setup is available as a complete package that includes a four-channel multicore cable with a Neutrik multipin connector.

www.schoeps.de

Russ Berger Made Fellow Of ASA

Russ Berger, President of Russ Berger Design Group (RBDG), has been named a Fellow of the Acoustical Society of America (ASA). A delighted Berger announced, "Since my days as a studio owner, I have always been fascinated with small room acoustics. It is very rewarding when I hear good sounding audio from a television broadcast or a song on the radio, and know RBDG's acoustical work contributed to that sound."

www.asa.aip.org

Versatile And International – Lawo's mc²56 Console

The South African Broadcasting Corporation (SABC) has taken delivery of the first of four new OBVs, all decked out with Lawo's mc²56 digital audio consoles. The vans were put straight into action for the recent 2009 FIFA Confederations Cup, which provided SABC and Host Broadcast Services (HBS), the host broadcaster appointed by FIFA, the perfect opportunity to rehearse for the 2010 World Cup. The 'Confed Cup' tournament was broadcast worldwide with countries taking audio and video feeds from the host broadcaster in South Africa.

Lawo's proven reputation was a major factor for its endorsement. Mervin Buthelezi, Technical Manager of the OB Units commented, "After evaluation, research, and testing by our own sound engineers, we all felt that the Lawo mc²56 had the power, flexibility, reliability, and redundancy we were looking for."

Each OBV is split into four areas – Production, Sound, Video Tape Area, and Vision Control. The Sound area is equipped with mc²56 consoles featuring a 64-fader stereo fully programmable control surface in a 32-16-16 configuration. Full processing for each channel is built into the desk, while the HD Core offers 128 AES inputs and 128 AES outputs. A Lawo DALLIS frame provides all the other AES and analogue I/Os.

The mc²56 has also played a central role in MTV Canada's major overhaul of its Audio Control Room 1 (ACR1). The console was chosen due to its suitability for current projects and also for its ability to adapt to MTV Canada's evolving requirements. Kent Ford, MTV Canada's Audio Supervisor, was impressed with the console's versatility, saying, "ACR1 handles a broad range of production tasks. The mc²56's modular design enables the console to be very flexible, making it fast and easy to reconfigure the board for different types of production."

Lawo AG
+49 7222 10020
www.lawo.de

Sneak Preview Of New DK-Technologies Products

DK-Technologies is planning to unveil some new products at this year's IBC Show in Amsterdam. First up, is its entry-level PT0710M HD/SD waveform monitor, a single channel version of the four-channel PT0760M. The unit is suitable for OBVs and smaller production studios with features that include de-embedding and display of up to sixteen audio channels.

Also getting previewed is a new graphical loudness display that complies with ITU 1770/71 guidelines. Finally, the company will premiere its new Nebula display designed for use with DK's StarFish/JellyFish 5.1 metering system.

www.dk-technologies.com

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Santorini's Studio in the Sun

Alongside its rich heritage and idyllic Aegean Sea setting, the Greek island of Santorini now boasts a five star residential recording complex. JIM EVANS reports.

MEDIA MATTERS

State-run broadcasters enjoyed a near-monopoly until the late 1980s, when new commercial TV services quickly gained a lion's share of the audience. Public TV lost a large slice of its advertising revenue as a result. News, domestically-made variety programmes, comedies, and game shows dominate the peak-time TV schedules.

Broadcasting is relatively unregulated by European standards, and many of the country's approximately 1,700 private radio and TV stations are unlicensed. An attempt was made in 2001 to impose some order on the crowded FM dial in Athens, prompting a political row.

VITAL STATISTICS

POPULATION	11.2 million (UN, 2008))
CAPITAL	Athens
MAJOR LANGUAGE	Greek
MONETARY UNIT	1 euro = 100 cents
MAIN EXPORTS	Textiles and clothing, food, oil products
GNI PER CAPITA	US$29,630 (World Bank, 2006)
INTERNET DOMAIN	.gr
INTERNATIONAL DIALLING CODE	+30

Recording studios located on exotic islands are not a new idea – witness Air Montserrat, Capri Digital, Ibiza Sound, Compass Point – but it's been a while since a new player joined the sector. Step forward Black Rock. Located on the South Western tip of the idyllic island of Santorini, the southernmost of the Cyclades, Black Rock represents the fulfillment of a dream of owner/Manager Kostas Kalimeris.

He states, "It's been a dream of mine to own and operate a studio of this calibre since I began engineering at 17. I wanted to have a space that would inspire musicians and artists to do what they do best. Create."

As the well-worn cliché goes, it would appear that little expense has been spared in developing Kostas' dream. The studio and all that surrounds it is in the five star category. And the studio is the latest to be represented by UK-based MIloco.

"Black Rock holds the key to a world you thought you'd only ever dream of working in. Its sumptuous accommodation, breathtaking surroundings, and exquisite studio together embody everything that recording artists desire: complete luxury and bliss combined with top-end studio facilities – the ultimate combination for any creative project," says Miloco. "Guests will have the sole pleasure of a stunning three-storey six-bedroom Cycladic villa, boasting many tranquil living areas, a luscious pool and Jacuzzi, several outdoor terraces, and of course a pristine SSL room with J-series console and Genelec monitoring.

"Sitting high on Santorini's incredible volcanic landscape and immersed by panoramic views of the sea, neighbouring islands, beautiful historic settlements, and spectacular Aegean sunsets, Black Rock sets a supreme new standard for residential studios. A phenomenal recording destination, it provides clients with a creative experience like no other. Take a break from the real world and escape to its paradise…"

The main villa has been built on a cliff-top area of 6,700m², close to the famous Lighthouse of Santorini, and is engulfed by some of the most breath-taking oceanic views in the world.

Spread across three large floors, the house comprises several living, dining, and reception areas providing a choice of secluded indoor hangouts, sheltered from the baking South Greek sun. Black Rock contains six bedrooms, five of which serve guests and one used by staff.

The outdoor areas at Black Rock are magnificent. Four decked terraces line different sides of the villa, where guests can relax, sunbathe, or dine. There is an outdoor pool currently being built plus a Jacuzzi and barbecue area.

The studio at Black Rock is located on the west side of the house on the ground floor. Designed by Roger D'Arcy of Recording Architecture, it features a variety of different areas making it suitable for both tracking and mixing projects.

The studio is accessed through its own external entrance, which leads onto a large 40m² day-lit control room looking out over the sea. At the centre of the room is an SSL 9080 J Series console with Ultimation and Total Recall. The desk is joined by an awesome monitoring setup, comprising Genelec 1035B speakers, and a choice of KRK E8 and Yamaha NS10 nearfield monitors.

A Pro Tools HD2 rig runs on an Apple Mac Pro. There is a good selection of outboard including Neve 1081 Classic pre-amps, Manley, Focusrite and Avalon dynamics, and a variety of FX processers. Clients will have access to a great choice of microphones, including several Shure, Sennheiser, Neumann, and AKG models.

Situated next to the control room is the main recording area, which measures 25m². This long and tall room features a 6m high arch-shaped ceiling. At one end of the room are some sea-facing windows letting plenty of natural light into the space.

On the other side of the live room are two good-sized recording booths. The first is a specially designed 15m² drum booth. At the back of the booth is another window facing the sea and the pool, and at the front is a large glass divide into a smaller booth, which serves as an isolation space for recording vocals or guitars. This small booth is adjoined to the villa's kitchen and dining area, providing an additional entrance and exit to the studio.

The design of the studio has allowed for extensive visibility between all of the separate areas, through a number of soundproof windows and thick glass doors. Each of the studio's rooms has the benefit of natural daylight. An additional feature, which the studio will provide, are special tie lines connecting to Black Rock's bedrooms and outdoor spaces, providing clients with further recording options. AM

INFORMATION

Ⓦ www.miloco.co.uk

The Show Under Spotlight

Audio Media talks to PLASA's Director of Events, Nicky Roland, about what to expect from this year's 'number 1 show for the entertainment technology industry'.

Audio Media: *So, firstly, what's new at this year's PLASA09 show, and what are the highlights?*
Nicky Roland: There won't be change for change's sake, but there will be further development and improvement of the show to ensure that it delivers a valuable business experience and stimulates new industry opportunities.

Industry networking and a focus on real business is something the PLASA Show facilitates extremely well, so we plan to strengthen this aspect with the launch of a new networking feature in the middle of Earls Court 2.

Education and learning continue to be an important element of the show. We are planning some themed days with relevant seminars and workshops, whilst some of our exhibitors will be offering classroom-style product training sessions. 2009 will also see the introduction of a Small Business Pavilion for exhibitors new to the show.

Nicky Roland, PLASA's Director of Events.

AM: *How has PLASA09 changed and adapted to the market since the first PLASA show?*
NR: Since the first PLASA Show over 30 years ago, the event has evolved in parallel with the major developments and trends in the industry. Last year saw the highest attendance for five years, [which] demonstrates PLASA's continuing relevance through development, and how well-run exhibitions and events actively complement the digital and internet ages.

One of the key differences between now and 30 years ago is the show's role in reflecting wider industry and political initiatives. There were numerous government and not-for-profit organisations represented last year, and we also hosted the launch of the Mayor of London's 'Greening London Theatre' campaign, reinforcing our leadership position regarding sustainability in the sector.

AM: *What does the show offer to the industry in these challenging times?*
NR: The past 12 months have shown how valuable trade shows can be in keeping business flowing through the sector. There's a major gain to be had in the industry coming together in a live exhibition environment to showcase its new technologies and expertise, as well as to share solutions addressing the current situation. A professionally run exhibition offers excellent new business opportunities, and can help companies can find themselves better placed to trade their way out of recession.

AM: *Which sectors do you believe are growing?*
NR: Clearly those working in the construction and corporate events markets are finding things difficult at present, with clients having reviewed projects/strategies and either frozen or slashed budgets. However, there are some indications that things are beginning to open up slightly on other fronts and there are sectors where things are more positive – the touring, festival and theatre markets seem to be bucking the trend for instance.

AM: *How many exhibitors are booked?*
NR: At the time of writing the show floor space is 80% booked. In audio terms, all the leading manufacturers and distributors have committed to the event and we are delighted to welcome several new and returning names including Nexo, Cadac, dB Technologies, Prism Sound, and R K Sound Engineering.

AM: *What seminars will be on offer, and can you tell us a little about these? Is there anything particularly enticing?*
NR: This year, for the first time, there will be two Gottelier Masterclasses.

The first will see John Stadius of Soundtracs/DiGiCo, discussing the history of mixing console design from the earliest days of Soundtracs to the latest moves beyond DSP, and possible future trends in console design. The Masterclass starts on Monday 14 September at 3pm.

The second Masterclass will be presented at 5pm on Sunday 13 September, by Tony Andrews of Funktion-One. Tony will present a debate on 'The Importance of Sound Quality', a presentation about the detrimental effect of convenience technology on music sound quality, how to reverse this trend, and why high fidelity is important.

The Education & Learning Programme will feature other important pro audio sessions, including one by the renowned acoustician Peter Mapp entitled 'Loudspeakers, Rooms, and Listeners'.

AM: *How many 'Awards for Innovation' will be distributed?*
NR: A total of eight Awards will be presented at this year's Awards Ceremony. As always, the judges will be looking for products and ideas that demonstrate not just lateral thinking, but forward-thinking too and will be looking for some ground-breaking developments. With sustainability issues rising up the industry's agenda, this year's Environmental Award also becomes increasingly significant.

AM: *What are your expectations for visitor attendance?*
NR: Visitor pre-registration is currently running level with that of 2008 – which is a very positive indication and something we will be building on in the months ahead.

AM: *According to your promotional materials, PLASA is 'the number 1 show for the entertainment technology industry'. What makes that so?*
NR: A unique combination of factors: you can see the best global event, entertainment, and installation technologies under one roof – it's a real 'one stop shop' for anyone in the business and it hosts an exceptional number of international product launches.

We understand the importance of getting people together, so we ensure our visitor facilities are second to none… providing exceptional opportunities to meet, network, do business, and socialise. AM

INFORMATION

PLASA09
Earls Court, London
13-16 September, 2009

1814: Rhythm of a Nation

Fact: the American National Anthem was penned in 1814. And a better world through joint effort was surely likewise on Janet Jackson's mind as she, Jam, and Lewis conspired on her hit album of 20 years ago, *Rhythm Nation 1814*. MOJO WORKING discovers the vein of 'God Bless America' that continues throughout.

Released 20 years ago, Janet Jackson's *Rhythm Nation* 1814, the singer's fourth studio album, confirmed the younger Jackson's position in the rarified atmosphere already occupied by her brother Michael. *Rhythm Nation* became the only album in Billboard's history to spawn seven top five hit singles (Michael, with *Thriller*, and Bruce Springsteen, with *Born in the USA*, had earlier achieved seven top 10 singles) and is the only album to have generated #1 Billboard hits in three consecutive years: *Miss You Much* (1989), *Escapade*, and *Black Cat* (1990), and *Love Will Never Do (Without You)* (1991).

Jimmy Jam (born James Harris III) and Terry Lewis, having very successfully shepherded Janet through *Control*, her first album project with the production team, were the obvious choice for the follow up. But this was not to be a carbon copy of the previous album. "It was sonically different and it was certainly thematically different," recalls Jam. "Even though her last album was called *Control,* this was her breakthrough record as a writer, also."

The making of *Rhythm Nation*, which lasted six months, beginning in late 1988, took place during the relocation of the production team's Flyte Tyme studios in Minneapolis. "It was the first to be mixed at the new studio and the last to be recorded at the old studio on Nicolette Avenue," says Jam.

The old studio featured a single room with a Harrison MR4 console. With the pair working on multiple projects simultaneously, a previously unused garage space had become a second room, outfitted with a Harrison Raven. Jam was in the smaller room working on a song when Janet walked in and asked who it was for. "I said, 'you,'" Jam recollects. "I pointed at a key on one of the keyboards, a string part, and said, 'press that'. She ended up playing the string part on the chorus of the song that became *Miss You Much*. That was the start of the record."

It was during the songwriting phase that the project began to evolve into a socially conscious concept album, according to Jam. "We would always have the TV on in the lounge, and we started getting really affected by what we were watching on CNN or whatever was on."

If Janet got stuck on a lyric, Lewis, busy also supervising the studio relocation, would step in, says Jam. "We had come up with the theme for *Livin' In A World (They Didn't Make).* Janet knew what she wanted to say but couldn't figure out how to say it. Terry walked in with wallpaper and carpet samples. I gave him the concept and he proceeded, in about 15 minutes, to bang out the lyrics."

The typical Flyte Tyme writing process often began with a rhythm track. *Control* had utilised Linn Drum, but the producers, ever eager to use new technology, brought in an Emulator SP-12 sampler/drum machine for the new album. "I set it up and started messing around, heard some sounds I liked, and we ended up cutting the track to what would become *Love Will Never Do, Escapade,* and *Miss You Much,*" says Jam. As for the rest of the tracks, "We would trigger different sounds but the beats would be sequenced on the Linn Drum. [Engineer] Steve [Hodge] would even sometimes plug in a different drum sound for a section of a song during mixing."

Other than for rhythm patterns, the pair eschewed sequencers. "If you listen to the beginning of *Rhythm Nation,* for instance, with all the starts and stops, I was just turning the drum machine on and off. Even the progressions weren't four bars – one would be three, one would be five and a half. We then went back and figured out how to fill the spaces, with a vocal sample or a sound effect, to make it unique," says Jam.

"At that time, we always played bass together," comments Lewis. "It's a feel we like, bass and keyboard bass together." Jam's keyboard bass parts on songs such as *State Of The World* and *Alright* were played on the recently introduced Korg M1.

The pair took a low-tech approach to flying in backgrounds and vocal samples with a Publison Infernal Machine or AMS DMX 1580, triggering events by hand. Two songs were also built using samples: *Rhythm Nation*, which took a guitar lick from *Thank You (Falettinme Be Mice Elf Agin)* by Sly & the Family Stone, and *Alright,* which sampled *Think (About It)* by Lyn Collins. "I loved the idea of sampling. It gave another life to a really great song. We were musicians, so we looked at it as a musical thing rather than a crutch," explains Jam.

The new Flyte Tyme facility featured Harrison Series 10 desks, among the first digitally automated analogue consoles. According to Jam, "Steve did a bunch of automated panning. We were trying to get this urban, street sound, and to call attention to something we threw it in one speaker then moved it to another. There were a lot of ear candy things like that."

The biggest challenge was Janet's voice, according to Jam: "We would create these big, aggressive, loud tracks for her, and she has a soft voice. I always thought that it was almost like another instrument, so it wasn't about making it loud but just tucking it right into that spot. Where Steve was amazing was fitting her vocal in where it needed to be – we called him Vocalmaster!"

Apart from the title track, which includes other vocalists, and some low harmonies from the producers, "She did 100 per cent of the vocals; she has a big range. We thought that was important, because that way it's truly her record," he adds.

Plus, he says, "She's not the kind of singer you sit and listen to, she's the kind of singer you sing along with. We would always stack the harmonies in order to bolster that. She worked really, really hard on that album. There are some tremendous harmonies on *Love Will Never Do*, for instance, some amazing stuff."

A Jam and Lewis track wasn't finished until some final overdubs were added during mixdown (that's still the case). "As much as we liked the drum machine we always tried to have some live elements on the track. It might be a bell tree or wind chimes or a vibraslap. It was the polish," says Jam, who shares that they even coined a phrase for those overdubs: "It wasn't done until we had added 'pings and zings.'".

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Thanks to Mojo Working International for putting this feature together. Mojo is a PR company for the global recording, post, and creative markets. www.mojoworking.com

LOS ANGELES, CA - SEPTEMBER 04: Singer Janet Jackson presents the BMI Icon Award to her brothers at the 2008 BMI Urban Awards held at the Wilshire Theatre on September 4, 2008 in Los Angeles, California. (Photo by Lester Cohen/WireImage, 2008)

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TwoFour54

STEPHEN BENNETT talks to Wayne Borg of Abu Dhabi's major new media centre, twofour54.

In October 2008 I was invited, along with most of the world's media journalists, to Abu Dhabi to witness the launch of the Emirate's new Media Centre. The actual name of the facility was kept shrouded in secrecy and at the press launch in, what was effectively a high tech, air conditioned tent, several speakers, including Tony Orsten, the Chief Executive Officer of the new project, spoke about the new venture in front of the journos and His Highness Sheikh Mohammed Bin Zayed Al Nahyan, Crown Prince of Abu Dhabi. Then, with a flourish of synthetic trumpets and lights, the project's brand name and logo were revealed – it's called 'twofour54'. The name represents the geographical co-ordinates of Abu Dhabi – a fact lost on some of the, shall we say, more 'arts orientated' journalists present. Orsten, whose path to the middle east was via Viacom, introduced the conceptual basis of the zone; to provide extensive services and training for Arabic people to produce services for Arabic consumers in Arabic – films, radio, music, and all other manner of audio and visual materials. twofour54 incorporates partnerships from around the world including the BBC, CNN, the Thompson Reuters Foundation, The Financial Times, and Random House – who will provide training, experience, and services for the new venture. Though the media launch was large on concept and aims, it was short on the precise details of the technical facilities that would be available when the centre was up and running. So, as the strains of Duran Duran's music played out on the closing evening's party, I was no clearer as to what twofour54 would actually be providing with respect to equipment and facilities for its aspiring producers and students.

A Year Later...

Fast forward to 2009 and I'm speaking to Wayne Borg, Chief Operating Officer at twofour54 and the man who is responsible for developing and managing the company's strategic operations, to finally find out more. "I joined twofour54 in March 2008, bringing knowledge and experience of the global media industry spanning Europe, Asia Pacific, Latin America, and Russia," says Borg. "Previously I was with Universal Studios and responsible for leading all aspects of Universal's commercial activities outside of North America. I've also held senior positions at Warner Bros and Disney." twofour54 intaj is where the main state-of-the-art technical facilities for post production and production are based, and these are broken down into several areas of facilities and services – as Borg explains. "twofour54 intaj has five TV production studios ranging in size from 60m² to a large 650m², all equipped with the latest High-Definition systems," he says. "Skilled technical, operational, and creative teams will make up the highly qualified in-house workforce, while a carefully selected freelancer pool will also be available." intaj services will be available either wet (fully staffed) or dry (equipment and studios only), and also offer extensive post production facilities with 22 suites, including those for high-definition video editing, audio post-production, graphics, and high-end compositing suites. Media Management will be an important part of twofour54 intaj, according to Borg. "It is the only commercially available facility in the Middle East featuring state-of-the-art media asset management systems for indexing and cataloguing of content and electronic archiving facilities, with redundancy and disaster recovery systems," he says. "There will be broadcast and connectivity services, satellite uplink services, fulltime and occasional uplink services to different satellite platforms, satellite downlink Services, TVRO (TeleVision Receive Only) services from all the satellites covering Abu Dhabi and other digital Satellite Platforms."

The Team

Along with Borg, twofour54 has recruited an experienced technical team to assist with the operation of this major facility. Hasan Sayed Hasan, Head of Media Technology and Head of twofour54 intaj, has been working in the media industry for the last 16 years, holding senior positions with various TV networks based in Lebanon and the UAE (United Arab Emirates). As a key founder of Al-Rai TV, the first private TV station in Kuwait (2003), he was responsible for building state-of-the-art production and broadcasting facilities and was also Chief Technical Officer of CNBC (Consumer News and Business Channel) Arabiya in Dubai where he set up CNBC Africa broadcasting from Johannesburg. In 2007, he received the Broadcast Engineer of the Year Digital Studio Leadership Award for his efforts and contribution to the growth of broadcast and production in the region. Martin Mueller-Karera, Operations Director, has had long experience in the media industry in Germany and Europe. Before joining twofour54 (after managing Media Operations for the Al-Jazeera English Channel in Doha), he held senior positions with CTV in London, Disney TV, Nickelodeon TV, and RTL2 in Germany. Omran Abdallah, Engineering Director, has around 15 years of experience in the regional media industry. He was Senior Broadcast Manager with MBC Group, where he was responsible for setting up and maintaining MBC's Broadcast and Production Centres around the Middle East.

I asked Borg why he felt Abu Dhabi needed the facilities offered by twofour54 at this time. "To understand our technical ambitions, we must first look at why twofour54 was established. ▸

While there are many regional TV channels and the film industry is well established, a sustainable media and content industry covering the full range of media platforms including broadcast, digital, gaming, publishing, and music does not exist – yet the demographic of the region represents enormous potential," he says. "There are 300 million people in the Middle East and North Africa (MENA) region, all bound by a common language, 60% of whom are under the age of 25 with a great appetite for entertainment and leisure consumption. On top of this, forecasts for advertising spend remain robust across all industry sectors, and this will fuel content production budgets." – though whether these projections remain valid in the current economic climate is possibly uncertain. Borg continues; "twofour54's vision is to establish a sustainable Arabic media and entertainment content creation sector; a regional centre of excellence which is internationally renowned. Most pressing is the need to develop and build the talent pool, both in terms of numbers and the skill set. This is the role of twofour54 tadreeb, our training academy, whose task is to take existing media professionals and up-skill and re-skill them to the very highest international standards using the latest technologies. It also involves explaining to school leavers and college graduates how sophisticated and diverse the media industry is, and to encourage them to view it as a serious career choice when planning their futures."

Bricks And Mortar

At the launch last year, we were presented with an overview of the 'road map' for twofour54, but little in the way of concrete information as to how the aims could be implemented. Since then, the technical side of things have been firmed up so we now have some building materials for the road itself. "The intaj facilities are currently under construction, with factory acceptance of systems well underway," says Borg. "This is being done in the UAE by Sony and should be complete by the second quarter of 2009. This process and further factory acceptance should take about two months with the aim of launching in quarter three or four to take advantage of the peak production period around the month of Ramadan." The facility will have five fully digital TV Production Studios with 40-channel and 56-channel Calrec Omega Audio Consoles – expandable to a total of 120 channels for large audio recording venues. The consoles are linked together using the Calrec Hydra Networked Audio system, which offers a great deal of operational flexibility. There's also a large selection and range of microphones to serve any type of live audio recording session – mainly from Sennheiser.

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rooms equipped with 5.1 Digidesign Pro-tools HD setups with D-Control ES, Dynaudio Air series monitors, Neumann U87 microphones for voice over recording, and a large selection of plug-ins and VST instruments for music composing purposes," says Borg. "As the talent pool grows, we can start to develop a sustainable, regional media and content industry. This will be driven by twofour54 ibtikar that will be working with creative talent from the region to provide the funding and business expertise to get media businesses off the ground." Having spent a few days in the searing heat and dry air of Abu Dhabi, I was interested to hear if Borg thought there may be any particular technical problems that may manifest themselves in such a climate. "We do not foresee any issues with the climate except for outdoor shooting which is difficult during the summer season," he says. "From a technical support point of view, we have a highly skilled in-house engineering team who will maintain our facilities, and also extend the services to offer expertise and support services to partner companies within twofour54. As far as maintenance is concerned, the UAE is the regional hub for all major equipment suppliers who have support offices locally."

> "While it's patently obvious that there is a need for regional production facilities and content in the Arab world, only time will tell if Abu Dhabi's ambitious aims will come to fruition . . ."

"From a technical perspective, it is important that our international partners, and any local and regional companies looking to base themselves at twofour54 or even just want to use our facilities, have access to the very latest international technologies and equipment. We must also stay abreast of technological developments in the production industry. The same is true for our training offering. If we are to build the talent pool, they need to know they are learning the latest technologies using the same state of the art equipment that their counterparts anywhere in the world are using. These new businesses, as well as existing partners, will increase the need for state of the art production and post-production facilities, and this is where twofour54 intaj comes in. So you see how twofour54's advanced ecosystem, which offers infrastructure, training, a new business incubator, and production facilities all on one site – all works together to create Arab content by Arabs, for Arab audiences."

Though productions and training had not actually begun while this article was being compiled, Borg anticipates that the broadcast facilities will be ready in June with production facilities ready in August of 2009. 'We will hope to begin production soon after that, and currently have some exciting projects in the pipeline once we start operations," he says, "Among them are TV feature films by one of the largest regional producers – but we cannot reveal more than that at this stage. "

Best In The World For The East

According to Borg, "twofour54 intaj is bringing the best of what the world can offer in versatile and multi-purpose production and post production studios and facilities to Abu Dhabi to serve the Middle East & North Africa region," he says.

Wayne Borg of twofour54.

"As the twofour54 ecosystem begins to take shape, and we start to see the establishment of a sustainable, vibrant Arabic media and entertainment content creation industry, then we will see increased demand for our facilities both from within the region and internationally." While it's patently obvious that there is a need for regional production facilities and content in the Arab world, only time will tell if Abu Dhabi's ambitious aims will come to fruition against the combined pressure from other local Media Zones (such as that in Dubai) and the current economic climate. What is certain is that twofour54 is starting from a strong technical base with state of the art facilities and a strong technical team.

INFORMATION

www.twofour54.com

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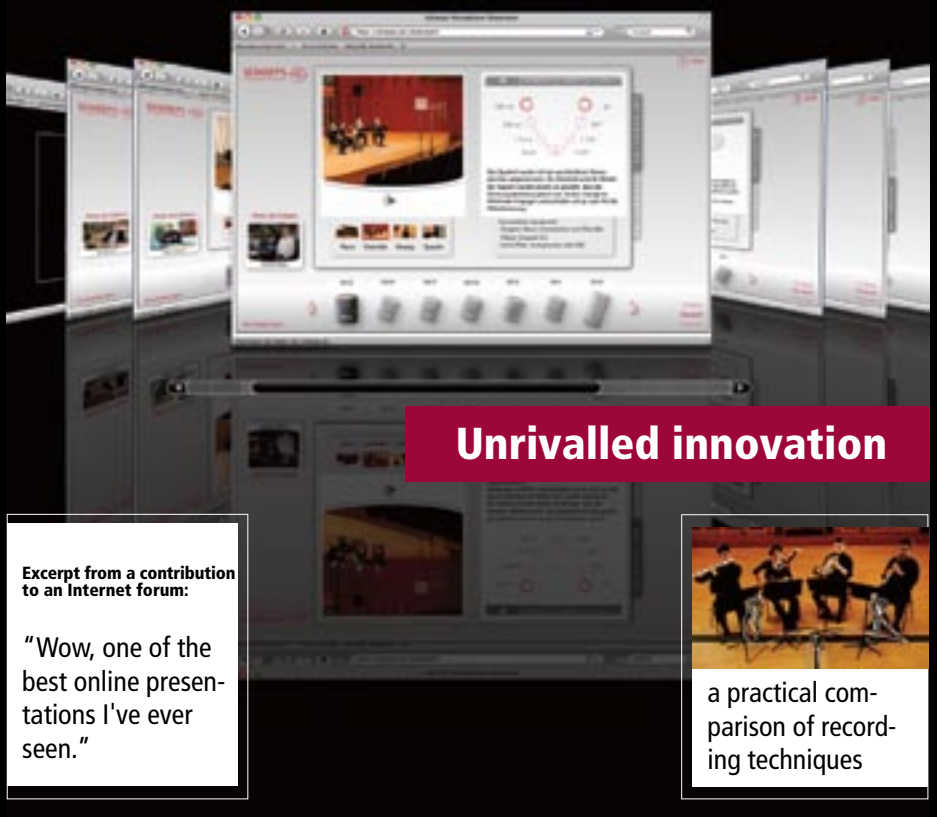
www.schoeps.de/showroom/



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series 5

EVENT OPAL

Nearfield Monitor

An impressive new active nearfield from the company that invented 20/20 sound, concludes ANDY STEWART.

Like my Quested VS2108As, the Event Opals don't try and defy the laws of physics by attempting to wring a huge sound out of a small cabinet. The enclosures are extremely well constructed from heavy-grade injection-moulded aluminium (their overall weight is over 21kg). The curved cabinet design, like many modern nearfields, is constructed to minimise diffraction and internal cabinet resonances, with the added bonus of providing extra rigidity and strength, and therefore clarity. The patented front-facing slotted bass reflex ports unusually wrap themselves down each side of the cabinet, looking like goal posts through a fish-eye lens.

The engine is a Class AB all-analogue amplifier design, providing 750 watts of peak power. On the front panel, hidden beneath a removable rubber lid, lies an array of rotary stepped controls. On the far left is a five-position stepped level control. The next dial along is a three-position 'Space' control, which provides bass compensation for speakers should they be positioned in a half space (against a wall) or a quarter space (in a corner). The next three controls relate to the 'Q', frequency and cut (labelled 'depth') of a bass EQ filter that works (again in steps) between 40 and 280Hz. The next two controls are also five-position switches that manipulate the high and low shelving filters up and down at 5kHz and 200Hz. The final switch controls the intensity of the illuminated 'Event' logo on the front panel.

It's In The Detail

There's another particular detail I'd like to mention here: when the speakers are first switched on, they enter a self-diagnostic mode (evidenced by a solid white glow from an LED on the front right-hand side of each cabinet). This mode lasts for around 22 seconds all up – just long enough to have you reaching for the volume control as you puzzle over the lack of any meaningful signal. I made this mistake on day one… and by the time the speakers finally kicked into life I'd cranked my Neve's monitor pot. The resulting sound was that of a freight train crashing through the front wall of the studio. I only made this mistake once.

The large waveguide surrounding the high-frequency driver is also rotatable (after removing four screws), which allows the speakers to be placed on their side. The speakers come supplied with rubberised feet that sit underneath the monitors equally well in either position and even the backlit Event logo is rotatable. Finally, they have a sturdy handle on the top rear of the speaker to help with lifting duties.

The main eight-inch driver can produce a raw signal that stretches from an impressively low 30Hz to a high 10kHz, with its published 1000W power handling not something I was really prepared to test the boundaries of.

The cone itself is made from a lightweight long-strand carbon fibre composite that's incredibly stiff to the touch and very resistant to physical distortion, as it pushes a broad range of frequencies out into the world with apparent ease. Its sharp external outer edge makes the driver look every bit as tough as the material from which it's constructed, and the overall package seems bullet-proof and ready for action, even if the aesthetic seems almost too aggressive to my eye.

The ULD1 high-frequency driver is made up of a one-inch beryllium copper dome, which emits low-distortion top-end out past 22kHz, again partly due to its extreme strength and rigidity. This super-lightweight high-frequency metal driver offers a fidelity and dynamic response that's not for the feint of heart.

In Use

I've done a lot of listening to the Opals in recent weeks and to cut to the chase, they're one of the most revealing two-way reference speakers I've ever heard. They bring out the brutal details with finesse, and their tonal balance is excellent and their bottom-end extension very impressive.

The stereo image presented by these powerful speakers creates the perfect illusion: the monitors themselves seem to vanish from view, leaving you with nothing but a big, glorious soundstage in which to work. Very few speakers have ever tricked my brain to this extent before. In the dark, and with the Opals' backlit 'Event' logos switched off, it's as if the whole control room is the speaker. They don't just make you look left and right, but somehow up and down, near and far as well.

The placement of sounds inside this three-dimensional space is quite incredible; asymmetrical reverbs stay localised to where they've been panned, acoustic instruments draw you to their position with startling resolve, and the air around individual elements can be heard breathing, rising, and falling with the music. Upright pianos reveal their imperfections and tuning issues, vocal edits demand greater scrutiny, and kick drums sound like they're being played right between the monitors.

Making Light Work

The Opals also make light work of big dynamics. This is one of their great strengths, in fact. Most studio monitors do a reasonable job of playing mastered CDs, but many come up short during the setting up of a kick drum's signal chain, for instance. Here, the Opals shine, handling a typical tracking session with nonchalant ease.

INFORMATION

- £ **GB£2,172.18 per pair (exc.VAT)**
- Ⓐ **Event Electronics, Australia**
- Ⓣ **+61 2 9648 5855**
- Ⓦ **www.event1.com**

- Ⓐ **UK Distributors: Source Distribution, Unit 6, Pembroke Buildings, Cumberland Business Estate, London, NW10 6RE**
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THE REVIEWER

ANDY STEWART is a regular reviewer for *Audio Technology* magazine.

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Audio Media

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TRINNOV STEREO OPTIMIZER

Monitor Correction System

If you have a less than ideal listening environment, SIMON TILLBROOK has found the perfect way to make it perfectly ideal.

Having a set of monitors you understand and trust is one fundamental piece of our system setup, and we have had numerous systems designed to 'flatten' their response in any given room. Most tend to focus on the speaker in isolation with little regard for the room itself, and the equalisation required to correct the many issues it brings to this problem.

Trinnov Audio was established in 2000, and has focused on research into the enhancement of recording and reproduction accuracy of audio in 3D. Back in 2005, Trinnov introduced the Optimizer, a monitor correction system for use with multi-channel monitor arrangements, which has found fans in broadcast and post with the likes of ORF, Fox Studios, and the BBC, to name but a few.

Trinnov has now expanded the range of acoustic correction systems with the Optimizer ST, a stereo monitor correction system based on its larger counterpart with both frequency and phase correction, and the addition of two dual-active crossovers (up to four-way).

Overview

The Trinnov Optimizer ST is housed in a 2U box and utilises the same Linux-based software as the multi-channel version. This can be controlled either by connecting a keyboard and mouse to the onboard dual–core PC, or through a local network connection and PC or Mac with a VNC client.

Network connection can also be utilised to connect to Trinnov to update software and perform various diagnostic processes if required.

Audio connections available with the Trinnov Optimizer ST include two balanced analogue inputs and six balanced analogue outputs. Digital connectivity is covered with two channels of AES, ADAT, and SPDIF I/O. Onboard 64-bit floating point processing can handle sample rates of 44.1, 48, 88.2, and 96KHz. The Trinnov Optimizer ST uses Max. Length Sequence (MLS) signals generated and then distributed through your monitoring system to take measurements of the impulse response of the room as delivered by your monitor setup. The Optimizer then takes this data and applies Trinnov time and frequency analysis algorithms to identify specific room modes and what correction should be applied.

By default, this correction is defined against a target curve that neutralises the effect of room modes, but various target curves can be used. They can either be a recognised standard or a custom curve of your choice.

Setup of the Trinnov Optimizer ST to initially calibrate the system involves inserting the Optimizer into your monitor signal flow chain and setting the measurement.

The software with the Trinnov Optimizer ST is surprisingly straightforward to use and understand considering the complexity of information and process.

General settings include input configuration, I/O routing, crossover settings for 2, 3, or 4-way monitors, clock source, and system status. Selecting 'Optimizer' presents a graphical representation of the basic monitoring arrangement, options for target curves, and tolerance parameters. You can, for example, set maximum levels of corrective cut and boost or time alignment. In fact there are many options, clearly explained and illustrated in the excellent manual. When you hit the 'start' button, the Optimiser sends out test signals through each monitor in turn, and once the cycle is complete, frequency and phase curves are shown, before and after, or each speaker. The system applies FIR and IIR filters to correct frequency response and phase delivery across the spectrum, and you can manually refine to taste.

Listening

It is possible to store calibration settings with the appropriate correction, so a number of engineers could have their custom monitor settings recalled at the touch of a button. This also lends itself to having a number of settings for the same monitor setup for different areas of your control room, such as a client area.

I ran through the calibration process for a number of nearfield and farfield monitor setups in different areas of the control room to get a feel for how well the Trinnov Optimizer ST could deal with such variation.

Listening purely from the perspective of continuity from position to position, the Trinnov Optimizer ST adapted the monitor delivery remarkably well. The overall tone and balance remained, despite quite considerable variations in both room acoustics and monitor speaker type. I could feel confident that my clients within the control room space could hear a mix I was listening to accurately.

From the primary engineering position I went through a number of basic tests with the Trinnov Optimizer ST correction in place and bypassed. These were all monitors I am very familiar with in a space I have worked in on many occasions. The difference in mid range clarity was very impressive, and the overall feel was one of a more solid and uncluttered delivery. The corrections were all really quite subtle and not overbearing, but achieving a clarity that made for more precise balancing.

I went back and mixed a couple of songs that I had previously done to see how the Trinnov Optimizer ST corrections affected the process and results. I can say that there were subtle changes in the imaging and subsequent overall dynamic feel of the mixes due to more precise imaging and signal processing resulting in a far more efficient phase relationship.

The differences were small, but the Trinnov Optimizer ST had simplified the need for compensation in the way I normally have to employ.

Conclusion

The Trinnov Optimizer ST is the most efficient and simple to use room correction system I have used. The default modes are excellent, as is the flexibility for fine tweaking or full manual custom settings for your monitor setup. Refinement of detail and clarity made for very pleasant use over extended periods of time.

If you have a less than ideal acoustic environment for critical listening, or a facility where multiple instantly switchable configurations are desirable, then the Trinnov Optimizer ST will look very appealing indeed.

INFORMATION

GB£2,669.00 (exc.VAT)

Ⓐ Trinnov Audio
Ⓦ www.trinnov-audio.com

Ⓐ UK Distributors: Sound Link
Ⓣ +44 (0) 1223 264765
Ⓦ www.sound-link.co.uk

THE REVIEWER

SIMON TILLBROOK is the Principal Music Tutor at Islington Music Workshop in London. The rest of his time is spent as a freelance engineer, mainly in the USA.

“ Man! This thing really DOES sound like ass! ”

(Joe Barresi - Tool, QOTSA)

Cabinets for guitar re-amping
Megaphones for windy protest marches
Phones and radios for hip hop and post pro
Trent Reznor in the trunk of a Volvo on a moonlit parking lot

It’s a plug-in but not as we know it.

SPEAKERPHONE 2

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NOVATION MUSIC ZERO SL MKII

Harware Controller

Easy to use and intuitive; Novation's ZeRO SL MKII knows exactly what SIMON TILLBROOK wants from a MIDI controller.

Since 1992, Novation has been producing an ever-expanding range of modelling soft synthesisers and controllers for virtual instruments and DAWs. These controllers, coupled with Novation's Automap server, have found numerous fans at every level of the industry.

The latest to join this well established product line is the Novation ZeRO SL MkII. The version for review is the unit without the keyboard and XY control pad, so geared towards DAW control more than performance.

Control Surface Overview

Supplied out of the box, along with the Novation ZeRO SL MkII, are a couple of disks with drivers and manuals, along with the Excite+ pack which includes a copy of Novation Bass Station synth and a variety of samples and loops. A copy of Albeton Live 7 Lite is also supplied.

The ZeRO SL MkII is a table-top device, supplied with screw-in feet that increases the height and angle of the unit if required – though it will fit nicely into a standard rack tray.

The top left corner of the unit is where you find the 144-character LCD display sitting above a number of different controls.

First we have a row of eight touch sensitive endless rotary encoders, each surrounded by 11 LED indicators. Next we have a set of eight touch sensitive pots, with about 300 degrees of movement stop-to-stop. These sit above eight velocity sensitive trigger pads. At the bottom of this first control section are 16 of the 32-backlit assignable buttons set out in two rows of eight. On the right side of the ZeRO SL MkII are the other 16-backlit assignable buttons, six of which can be used for dedicated transport control, and are labelled as such. Above these are eight touch sensitive 60mm faders.

Sitting between these two main controller sections is a multi-function rotary control, which can be used to scroll through and select templates and preset configurations. It is also the Speed Dial. This feature is found on virtually all Novation controllers, and allows direct and immediate control over whatever parameter you place your mouse curser over, on screen. Just below this rotary control is a touch sensitive 45mm crossfader.

Along the bottom of the unit are various navigation and mode selector buttons, including a Preview button that, when held down, will show the parameter data in the main display of whichever touch sensitive control you use.

The ZeRO SL MkII can be powered by either an external 9v DC supply or via USB. Connectors for both, along with a power selector switch, are found on the rear of the box, joined by two jack sockets that let you connect a sustain pedal and an expression pedal. There's also a standard set of MIDI in, out, and thru connectors supplied, along with an additional MIDI out port.

Advanced And Automap Modes

The ZeRO SL MkII has two primary modes of operation: advanced and automap. Advanced mode is used when the unit acts as either a stand-alone MIDI controller away from your computer, or when using it with software that is not supported by the Automap system. A number of templates for popular applications for advanced mode are supplied as standard and can be called up using the navigation control.

The Novation Automap software for automatically mapping control parameters of supported instruments and DAWs is now at version 3. All MkII units come supplied with this version.

There has been quite a lot of development since I last saw Automap. The user interface, described as a transparent heads-up GUI, is far more refined and can be accessed as you need.

Automap integrates HUI control for all compatible DAWs, and an additional start-up screen gives even easier access to general setting up. There's also one-click access to online support, updates, and tutorials.

The Autoview feature brings up the GUI whenever a controller is touched. You can simply drag and drop an assignment from one controller to another for quick and easy arrangement of your interface, and computer keyboard button combination shortcuts can be assigned to one of the 32 buttons using keystroke assign.

The new facility that most users will be excited about is the implementation of multiple device support. You can now have a number of controllers, each assigned to a different part of your own system setup, and all running simultaneously.

Use

Along with the ZeRO SL MkII, I was also supplied with a Novation Nocturn to test the Automap 3 Pro multi-device support. I setup and installed the appropriate software, then connected both controllers.

I was utilising Pro Tools for this test. It took a little time to configure the system to recognise the controller setup, but I eventually managed to get the ZeRO SL MkII implemented. I would suspect that integration and setup with other DAW systems, in particular Albeton, would probably be a little more straightforward. The manual is well written and various common setup configurations are covered.

Automap has come a long way since I last used it to any real degree, and is now far more straightforward and quick to use. The auto mapping works consistently, and having the Nocturn to control my chosen plug-in, keeping the ZeRO SL MkII for primary mixer interface control, made for a very intuitive workflow.

Rearranging controllers by drag and drop to suit personal preferences and mapping of additional features with a simple point and click learning process made the session flow with ease.

The whole setup around the ZeRO SL MkII feels more refined overall, and even though it is not a dedicated controller for the DAW I was using, it did not take long to feel fluent with use.

The Novation ZeRO SL MkII is a very neat solidly built little controller that, when coupled with the Novation Automap 3 Pro server, becomes an easy to use and intuitive working interface.

INFORMATION

Ⓕ **GB£329.99 (inc. VAT)**

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Ⓣ **+44 (0) 1494 462246**
Ⓦ **www.novationmusic.com**

THE REVIEWER

SIMON TILLBROOK is the Principal Music Tutor at Islington Music Workshop in London. The rest of his time is spent as a freelance engineer, mainly in the USA.

Model shown
CMS 50

"In a class of its own."

- Audio Media Review - April 2009

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FOCAL PROFESSIONAL

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- M.I.P.A (April 09)

m.i.p.a.

I would personally choose the CMS65 monitor for day-to-day use without hesitation. For me, the Focal CMS65 is in a class of its own.
- Audio Media (April 09)

AUDIO MEDIA

I can honestly say I found nothing about their performance to dislike. ...they have to count as some of the sweetest and most natural-sounding desktop monitors I've heard in the price range. Highly recommended
- SOS (April 09)

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Plus this year there's innovative new content with the launch of EVOLVE – a new one-day event focusing on developing games for new platforms, new markets and new technologies – which will open the Develop Conference on Tuesday 14 July and continue as a new track within the conference on Wednesday 15 July.

The Audio Track line-up for 2009

AUDIO KEYNOTE

The Runtime Studio in Your Console: The Inevitable Directionality of Game Audio
Guy Whitmore, Microsoft Game Studios

Dolby in Games – Every Bit Amazing
Simon Arnold & Marc Langsman, Dolby Games Group EMEA

Moore's More Story-Telling Power Of Sound: The Eagerly Anticipated Sequel To Last Year's Highly Popular Session
Paul Moore

Painting With Sound: The Future of Procedural Audio
Andy Farnell

Gold Blend: Audio Code and Design Working Together for the Perfect Flavour
Steve Emney and Ciaran Rooney, Disney Black Rock Studio

Real-time Audio: Context Is Everything
Kenneth Young, Media Molecule

Orchestral Soundtracks for Videogames: The Vital Do's & Don'ts For a Successful Orchestral Project
Allan Wilson

Guerrilla Tactics: Designing Audio for Killzone 2
Mario Lavin, Guerrilla Games

The 2009 Open Mic Panel Session: What will be the key factors for the development of game audio in the future?
Alastair Macgregor, Rockstar North
Greg O'Connor-Read, Music4Games, Inc.
Guy Whitmore, Microsoft Game Studios
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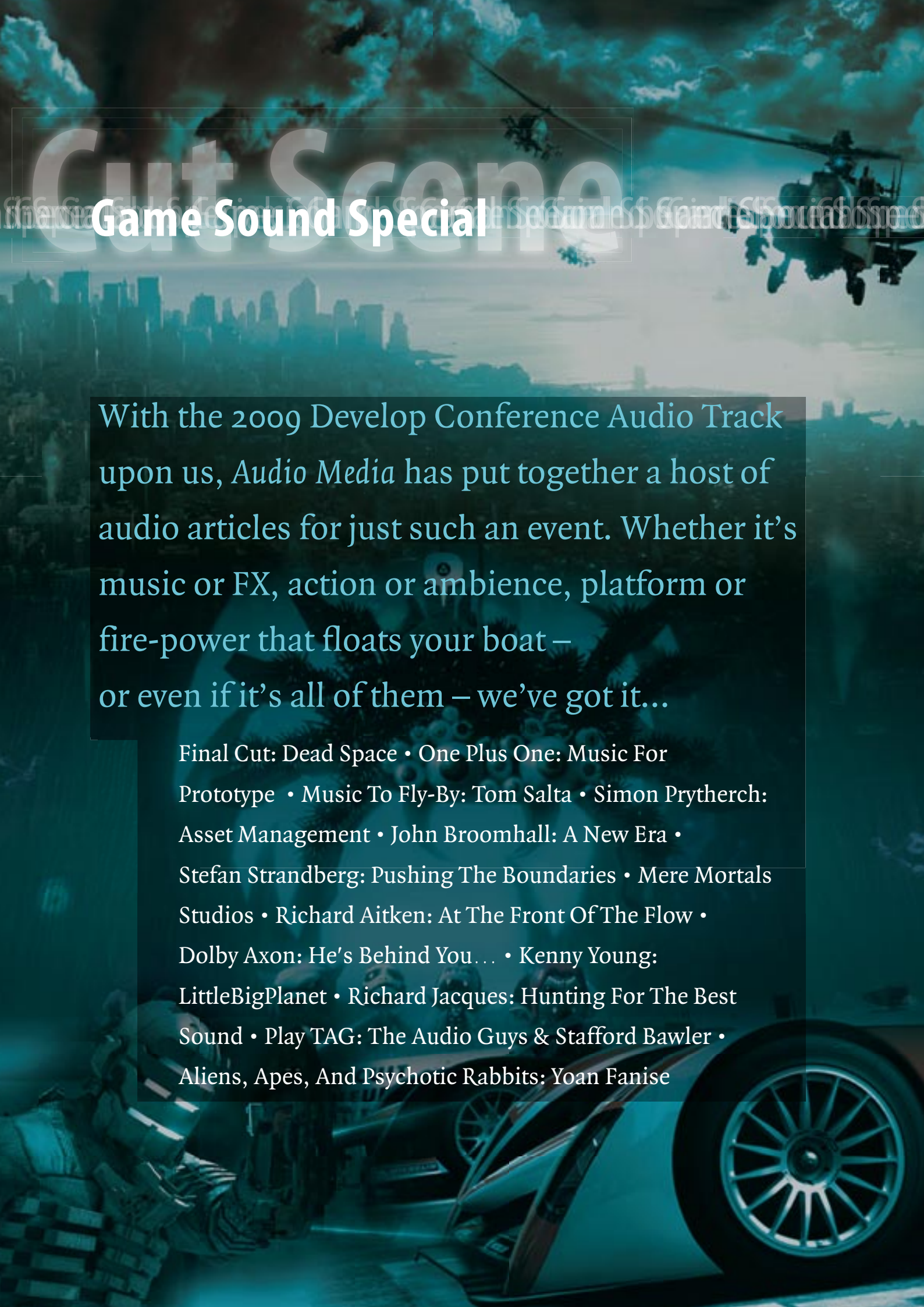

Game Sound Special

With the 2009 Develop Conference Audio Track upon us, *Audio Media* has put together a host of audio articles for just such an event. Whether it's music or FX, action or ambience, platform or fire-power that floats your boat – or even if it's all of them – we've got it...

Final Cut: Dead Space • One Plus One: Music For Prototype • Music To Fly-By: Tom Salta • Simon Prytherch: Asset Management • John Broomhall: A New Era • Stefan Strandberg: Pushing The Boundaries • Mere Mortals Studios • Richard Aitken: At The Front Of The Flow • Dolby Axon: He's Behind You... • Kenny Young: LittleBigPlanet • Richard Jacques: Hunting For The Best Sound • Play TAG: The Audio Guys & Stafford Bawler • Aliens, Apes, And Psychotic Rabbits: Yoan Fanise

Dead Space

Fear emitters, Dead Script, the creepy ambi' patch, and a composer named Graves are not-so-subtle clues to the general gist of Dead Space. Paul Mac talks to Audio Director Don Veca.

Dead Space is a very special game. There aren't too many full-on suspense/horror experiences in the gaming canon, and that may be because it's a very difficult thing to get right. Arguably, the audio in this genre is more important than any other – you have to build expectation and apprehension, and then you have to push the alarm button at just the right moment. Get it right and you have a winner on your hands; get it wrong, and all the effort will come to nothing – there's no middle ground when it comes to scaring people.

The initial premise of the game is that a mining ship, the USG Ishimura, sends out a distress signal, and another ship, the USG Kellion, is sent to investigate. On board is Isaac Clarke (the player's character), an engineer with, as it turns out, a special talent for dismembering Necromorphs (dead, alien scourge-infected, and mutated humans) with unorthodox weapons. The game progresses through a good plot, and some impressive scenarios – including zero gravity and de-compressed environments – to a spectacular end.

Got My Arms, Got My Legs

While he is at pains to point out that *Dead Space* was very much a team effort , Visceral Games' (formerly EA Redwood Shores) Don Veca, the Audio Director on the project, could be said to be the main brain behind the mayhem.

Veca was well aware from the beginning that audio would be absolutely vital to the game's success, so the systems that controlled the audio in-game had to be designed specifically for the job. "You have to have a really seamless system – an adaptive system," he explains,"…one that causes the music to react naturally to what's going on in the game – gradually build the tension and gradually subside the tension – as well as having automated triggers for stingers – when things jump out and scare you."

Don Veca, Audio Director on Dead Space.

For example, rather than going for a basic 'branching system', where the music might simply switch between streams depending on the situation, *Dead Space* has four stereo music streams playing all the time and the game is constantly mixing those streams. What controls those streams, as well as other aspects of the game's audio, is what Veca refers to as 'fear emitters'. These could be any aspect of the game itself – from a creature to a blind corner. The game is constantly calculating what fear emitters exist within a certain radius of the main character, what their fear strengths are, and coming up with a fear value for that moment. That fear value is what dictates the balance of the music in the game, as well as the balance of other content and mixing parameters.

"What I've always missed as a sound designer, and I think what most sound designers miss, is the control," he says. "It's not just the sounds that you create – it's the control those sounds." One of Veca's first tasks in the development was to work on a scripting system – one that sits on top of both the low-level audio drivers and the middleware. This script, called Dead Script ("It needs a cool name…"), gave Veca the power to work with audio at an audio-friendly level: "…Not render it, not do DSP, and not stuff buffers with sound, but just start sounds, mix sounds, set volumes, change filters, and do all the high-level control of the audio." All of these parameters could be fine tuned and honed, and content tried and tested without interrupting the flow due to lengthy code changes. Veca: "As far as control was concerned, I could do whatever I wanted, anytime I wanted."

Boo!

The combination of fear-emitters, fear value, and Dead Script led Veca to the overall concept of "fear-based mixing." And of course, this wasn't just about music tracks. Another contributor, with another special name, was the 'creepy ambi' patch'. During the preparation for *Dead Space* development, Veca and the team watched a lot of horror movies ("the good ones, the bad ones, and the really, really bad ones…"): "I watched a movie called *Saw* one night – I was really picking apart the audio and the soundtrack – and I noticed something about horror movies that you can't get away with in other movies. You can have weird sounds and creepy spacey sounds floating around you for no reason at all… It's not a real sound, it's not a door creaking, it's in your head… They can be anything; they can be completely synthetic – they can be weird moans or subliminal sounds, they can be whispers."

This is where the creepy ambi' patch comes in. Veca: "It lets us take different RAM-based loops and one-shot sound samples, and play them around you in 3D… We can track them and change the pitch, the volume, the filter values, the panning… So that's a lot of the weird, creepy, spacey ambiences that you'll hear in *Dead Space*." The creepy ambi' patch is controlled by the ▸

GRAVE TONES

The music composer for *Dead Space* was one Jason Graves (of course), and he had to deal with a commission that cited both the "dark, dreary horror – the lonely, desolate dude," and the "gore, horror, and dissonance." While a mix of Sci-Fi and horror was required, they moved towards the horror because, as Veca points out, many of the guns and computer effects carry the Sci-Fi element.

It was also Veca's wish to keep away from a traditional score; he wanted something "more ambient and textural." The solution was a trawl through all his favourite soundtracks to find moments and techniques that might apply to *Dead Space*. He sent Graves a big session of audio clips with instructions to orchestrate elements in that vein, but not to actually write any music or compose any songs. All those elements were then recorded, with Graves conducting, in orchestral sessions in Seattle and in Skywalker Sound, California. Graves then composed and created the music for Dead Space from the elements recorded in those orchestral sessions, in four mood layers: creepy, tense, very tense, and chaotic. "You don't really hear a lot of thematic music," says Veca, "I didn't want people to walk away humming a tune… So it was a different way of approaching music composition, I think."

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same fear system as the music is – with one important difference. The creepy ambi' patch is more active when not much is happening. The advantage is two-fold. First, of course, 'creepy' happens between the horrific bits – not during. Second, it lends itself perfectly to the basic mixing technique of getting rid of unwanted sounds as main focus builds: crescendo, not cacophony, in other words.

Another example is the surround reverb. At low fear, the music reverb is very present in the rear, for a more open, ambient sound. As the fear level rises, that reverb is proportionately lowered, 'de-muddying' the mix.

Veca also notes a very system co-operative approach to visual effects. In *Dead Space* the audio system tracks effects and modifies parameters during their life, as opposed to simply firing a single effect at the start of a discrete event and forgetting about it: "We were able to look at values inside the visual effect at every frame and say 'okay, it's changed slightly, we're going to change the audio to match exactly what it's doing.'"

Tooled Up

As far as core audio gear in Veca's studio is concerned, we can start with Steinberg's Nuendo, an RME Fireface 800 interface, and BlueSky monitoring. "I wanted to do great audio, but not overspend," he says. And then he adds an interesting point to the great value debate: "I never want quality to suffer – we have tonnes of plug-ins and a lot of great software – but another employee, another head working on the game, is worth a thousand plug-ins."

In plug-ins, Veca definitely has a few favourites from the *Dead Space* experience: "GRM Tools was just phenomenal. We used that for creating just weird, strange effects that you don't normally hear. AudioEase's Altiverb is some of the best software that I've ever heard in my life… and Speakerphone – we used that a lot too. Brilliant stuff." The Visceral Games team also used a good selection of synths and outboard in the design for Dead Space. Moog Little Phatty, Korg MS2000, Access Virus, Electrix Warp Factory, dbx, BBE, and more were all employed.

Heavy Breathing

There are some very specific moments and environments in *Dead Space* that needed special attention. For example, the excellent 'Zero G' (zero gravity) scenarios move away from an orchestral music arrangement to an all-synthetic soundtrack, "Using synths and digital effects," explains Veca. "I wanted to give you a sense of floating in space."

There's also the de-pressurised areas – no air. "People were asking 'what are you going to do when there's no air?'… I said 'I'm going to turn everything off because you can't hear things in no air'." Though Veca did leave in anything that might be conducted through Isaac Clarke's equipment and body, and still be audible in his suit: muffled breathing, heartbeat, his own muffled footsteps, creature hits, and so on. On entering de-pressurised areas Veca employed real-time filtering to 'suck out' normal sound in a very short time. Then again, on leaving the zone, sound rushes in and gets exaggerated: "It's an explosion of sound," he says. "I wanted it to be as loud as possible… from no sound to loud and ugly, and grating." For this, Veca recorded the San Francisco BART train (Bay Area Rapid Transit): "The wheels squeal, they go crazy… I went on the BART train with a Sony portable recorder and was standing between the two cars while it was going under the bay… Where it says 'Do not stand between cars'… I stood there." That's how horror movie characters get into trouble….

THE WINNER IS… (x20)

Obviously we can't know if *Dead Space* has won any more awards for audio between writing and going to press, but to the best of our knowledge, here's the 20 it has picked up so far…

- BAFTA: *Best Use of Audio, Best Original Score*
- Developers Choice Awards (GDC): *Best Audio*
- AIAS (Academy of Interactive Arts & Sciences): *Outstanding Achievement in Sound Design*
- GANG (Game Audio Network Guild): *Audio of the Year, Sound Design of the Year*
- Kotaku: *Best Sound*
- Game Spot: *Best Sound Design*
- IGN: Best Use of Sound (PS3)
- GameSpy: *Best Audio*
- Edge-Online: *Best Audio Design*
- Game Focus Awards: *Best Sound Design*
- NAViGaTR: *Use of Sound, Sound Editing in Game Cinema, Sound Effects*
- Golden 'Fro Awards: *Best Sound Design*
- TeamXbox Game of the Year Awards: *Best Sound*
- TGR Awards: *Best Sound Design*
- Cody Awards: *Best Sound*
- The Sixthaxis (TSA Awards): *Best Audio*

INFORMATION

www.visceralgames.com

Audio Director – *Don Veca*
Sound Designer – *Dave Feise*
Sound Designer – *Andrew Lackey*
Sound Designer – *David Swenson*
Music Composer – *Jason Graves*
Audio Software Engineer – *Jay Wells*

One Plus One

Most creative media projects are collaborations – everyone has a job, and everyone contributes to the pot. But what happens when you give two people the same job? Trouble? Not with Prototype... Paul Mac explains.

Prototype is an 'open world' game (free-roaming) centred around Alex Mercer. Alex wakes up in New York with no memory, but gradually realises he has some very special abilities, such as shape shifting, and an appetite for 'consuming' other creatures and taking on their abilities. As the plot unfolds, he realises that he's a genetic mutation – a result of his past as a scientist. New York gradually disintegrates as Alex battles military factions, infected civilians, and other assorted creatures.

Scott Morgan (Audio Director) and a small team at Radical Entertainment spent almost a year working on the basic IP for this game, honing the ideas and setting the tone for the creative input. Once the core ideals were in place, Morgan could go about gathering the content, which included starting the commissioning process for *Prototype*'s music.

Cris Velasco (L) and Sascha Dikiciyan (R).

After working through a lot of demos, he finally came to Cris Velasco (Monarch Audio) and Sascha Dikiciyan (Sonic Mayhem). The two of them have worked together on many titles, each taking on complementary roles – one of the main reasons Morgan settled on their services. "They do this electronic meets orchestra thing in a really unique way," explains Morgan. "It actually feels like each side is really legitimate and has a place in the music. We really wanted something like that for the score, something that felt grounded in the orchestra and very heroic, but at the same time had this kind of otherworldly science fiction element to it."

Morgan already had ideas for the feel of the score, with ideas of both avant garde and thematic orchestral elements from Velasco, and intentions to take advantage of what he describes as Dikiciyan's 'unique' electronic sound. After planning in as much of both the global music (for free-roaming) and the mission-specific music, it was time to get Velasco and Dikiciyan properly involved. Velasco notes that the whole project had simple beginnings: "Sascha and I sat down at a piano for a couple of days and came up with what was to become the main theme." The piano work went to Morgan, who was keen that the content would not be just about 'big themes', but would stand on its own in a minimal arrangement. Velasco: "You put any sequence of notes together with a big enough orchestra and a choir, and it's going to sound pretty good… But if we fall in love with it on the piano, then we know it's going to sound awesome when we record with an orchestra."

The pair has been working together, mostly on games, for quite some time. Credits include Ubisoft's *Haze* and *Beowulf* games, *John Woo Presents Strangehold* (Midway Games), *Hellgate: London* (Namco), Tom Clancy's *Splinter Cell Double Agent*, and quite a few more. Their working method, while not fixed, does follow a pattern: "I will come up with a rhythmic idea or something," explains Dikiciyan – referring to the *Prototype* project. "I will give that to Cris and see what he thinks, and then we say 'okay, this fits the scenario'… I will do a rough arrangement of my stuff and then give it to Cris, and he will use his orchestral samples to compose over that and then shoot it back to me." After this, Dikiciyan fine-tunes the result and sends it for approval or changes. At that point the pair can go into the studio and record the orchestral parts for real – Dikiciyan's parts will go to the session in the form of stems – as a completed contribution. The final version would then go to Morgan at Radical Entertainment for mixing and integration.

This process is a far cry from any traditional sense of composition. As is so often the case these days, it's hard to separate composition from recording, from production, from sound design. For a lot of the percussive content, for example, Dikiciyan went from a workstation and some varied rhythmic ideas, to a live percussionist with a few ideas of his own – and some very unusual things to hit. Then it was back to the workstation with the samples to start building again. So sound design is alive and well in music composition? Dikiciyan: "Absolutely… This is definitely a big part of what Cris and I do in this hybrid scoring of orchestra meets electronic. We call it musical sound design.

"I'm using a Kyma audio workstation, which I've had for a few years; and I also use things like Metasynth. I have many pedals, everything from a Metasonics masher to a WMD Geiger Counter – weird stomp boxes… I'll put sounds through those and this stuff will somehow end up in Kyma, and I'll maybe do a bunch of synthesis passes…"

Even on the orchestral side, the first big session was for effect… Velasco: I had a full day with a 60-piece string ensemble where I recorded just a bunch of crazy effects and aleatoric string pad type things… We didn't want the score to sound like anything else, so we did our own custom libraries for this one." That first session was recorded with an orchestra in Prague, via the orchestra.net service and Session software. The second and main session were at Skywalker Sound.

And thus the experimentation and creation continues, and in turn plays a key part in the composition process. The pair has a long history of successful collaboration (Cris estimates over 20 game projects so far), which is a rare asset in any creative medium. The pair put this down to a variety of things. One important aspect is a distinct lack of ego. Dikiciyan recalls his concern when he first critiqued a Velasco contribution: "I was really sweating it," he says. But the worry was unnecessary. Another part of the equation is equal opportunity when it comes to the arrangements. Velasco: "We definitely have a good sense of what the other is going to do, so we're pretty good at leaving space for the other one, without competing." This kind of partnership is the constructive kind – essential when deadlines are looming. Long may it continue.

INFORMATION

Monarch Audio www.monarchaudio.com
Sonic Mayhem www.sonicmayhem.com
Radical Entertainment www.radical.ca

For further insight into the music creation for Prototype, download the Games Special PDF from www.audiomedia.com.

Tom Clancy's H.A.W.X. – music by Tom Salta.

Music To Fly-By

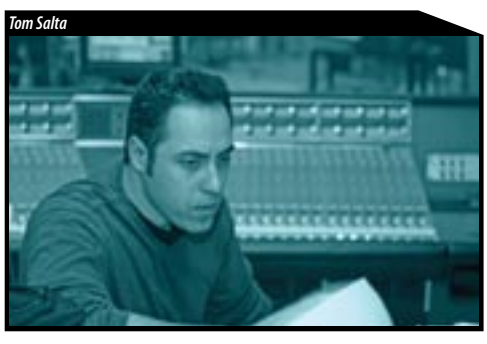
High energy games music specialist Tom Salta talks about his work, and his tools.

Known for his epic, high-energy music for the likes of Tom Clancy's *H.A.W.X.* and *Ghost Recon: Advanced Warfighter, Ubisoft's Red Steel, Sony's MLB 2006,* and EA's *Need for Speed Underground 2,* Composer/Producer Tom Salta has created a strong niche for himself in a highly-competitive industry. With a music background that includes work with artists such as Peter Gabriel and Whitney Houston, Tom Salta's combination of melodic creativity and technical skills consistently produce a first-class product.

What led you to the world of video games?
One day I was playing *Halo* on the Xbox, and the light bulb went off. I was listening to the music on-screen and starting paying attention to it…

At that point I figured it would be smart to use my strongest assets to create music that would be useful for certain kinds of video games – particularly driving and/or high action extreme sports. I decided to create an album of licensable high-energy electronica music… It was called *Two Days or Die* under the artist name Atlas Plug.

Overall, the idea actually worked very well; before I was done with it, Microsoft came along and licensed three or four songs for a game called *Rally Sport Challenge 2.* Right at the same time, Volvo was doing a new ad campaign for a car that was featured in the game. They heard the music the game was using and said they wanted it for their commercial. It was a grand slam in terms of licensing and exposure, and it gave the album a terrific launch.



Tom Salta

What is your main production platform?
I work with Logic Audio mostly, but also with Pro Tools. While I combine both hardware and software, it's become an atrophying studio (of hardware). I still keep my rack Mini Moog, and Roland 1080s, and the rest of my old keyboards hanging on my wall for sentimental value. Now, it's pretty much all software and my favourite instruments are from companies like Spectrasonics and Native Instruments.

Are most of your deliveries in stereo?
Yes. I have done some 5.1 and quad deliveries, but the trend in games is more for me to deliver stereo. For some of the larger companies, I end up giving them stems and they can mix the surround, although it depends on the company and the project size.

So when did you start using the Oxford plug-ins?
A friend of mine turned me on to them, and when I had a chance to listen, they jumped out at me. I really liked the Inflator, Dynamics, and EQ. The EQ has a very sweet sound to it. It's a subtle quality that my ears, after so many years, just know.

How about the Oxford Dynamics?
I was really impressed with that one. I find that good software compressors are generally hard to come by, especially if you want to do something comparable to the 'days of old,' when I would plug into an LA-2A or the Fairchild and it simply worked or didn't. That's the way the Dynamics feels to me and I'm blown away by its flexibility. It has a lot of components in there, which help me out when I need them. I also like the way you can turn the different modules on and off.

So how do you use the Inflator?
Generally, I like using it on the stereo mix. It adds a lot of energy without compressing the sound. I don't use it in a subtle way and prefer 'slamming' it. Most often, it adds just the right amount of power and loudness without losing the sense of dynamics. It's an energy enhancer. AM

THE SONNOX TOOLSET

High end plug-ins that can add sparkle, impact, and energy to your sound.

Two tools that are proving extremely popular for the games market, mostly because of the energy and impact they can inject into audio – without kicking the stuffing out of it with compression – are the Oxford Inflator and the Transient Modulator.

The Inflator provides an increase in apparent loudness, without obvious loss of quality or audible reduction of dynamic range. It can also add power, presence, and warmth, and even provide headroom

overload margin above digital maximum with a subtlety and musical character reminiscent of tube systems.

The Transient Modulator allows dramatic manipulation of signal transients. It can completely exaggerate or dampen the attacks, with continuous variation between all settings. So, if you're after more 'snap' in your gunfire or more 'crack' in your explosions, this is your answer. Conversely, it can bring up the ambience surrounding a specific sound by softening the attack. Transient Modulator gives life to dull sounding recordings, without the unwanted changes in overall timbre associated with compression.

Other Sonnox plug-ins include the famous Oxford EQ and Oxford Dynamics – both based on algorithms from the acclaimed Sony OXF-R3 digital mixing console.

The Sonnox Reverb plug-in has a pool of stunning presets as well as full control over many parameters, including a comprehensive early reflections section, and integrated five-band EQ. The Oxford Limiter provides program loudness control and limiting functions. Its Enhance function provides sample value limiting, and allows unprecedented volume and punch to be applied to program.

The Oxford SuprEsser is fully-featured pro De-Esser and a Dynamic EQ. An intuitive FFT display and three listen modes enable the user to easily see and hear exactly where the problem frequencies are, and since the SuprEsser can operate at all frequencies, 'plosives' and other annoyances can also be removed effortlessly.

INFORMATION

Sonnox www.sonnoxplugins.com

Asset To The Project

Simon Prytherch, CEO of Lightning Fish Games, has more than the average amount of audio and video content to deal with during a development cycle. Paul Mac finds out about strategies for an easier life...

Lightning Fish Games specialises in family-orientated fitness games, with a twist. It's rejected the traditional approach to avatars with the philosophy that both imagined characters and attempts at computer-generated 'real' characters tend to alienate the user. Its solution is to bring real video to the game, using in-house developed systems and multi-camera shoots to create seamless action with real people.

Simon Prytherch.

The inevitable result, for both audio and video, is a massive number of assets that need to be managed. Simon Prytherch, the CEO of Lightning Fish Games, has a number of weapons in his armoury of solutions, some based on lessons learned from the more traditional media – film and television. However, the first step is probably the most common denominator in asset management: planning. "We plan everything to the nth degree," he explains. "…From shot lists to the audio scripts. They have to be lip synched, and in multiple languages – six different languages, so more audio than video in some cases. For one video clip you might have five or six audio clips to alter the mood and feel of it."

The project that Prytherch has just finished with – *NewU, Fitness First Personal Trainer* (due to be released in September for Wii) – has a cast of 36 different actors.

The tool that brings all this content together is an in-house system that, in its current version, is called Thor (previously Zeus… lightning themes, you see). Thor helps the team manage assets from ingest to integration, which makes it an enviable piece of technology in any games environment. "It takes in all of our rushes from our audio and video and then, using the editor and notes from shoot days and recording days, processes it automatically. It also allows you to edit it and describe how it is used in the game." Lightning Fish has been asked about whether it wants to exploit Thor commercially, but issues like support, and distraction from its core role of making games, mean that's not currently a pressing concern.

After planning comes the capture phase, and Prytherch explains that the sessions are run very much like a motion capture session, except with cameras. An important aspect at this stage is the logging of sessions. "We produce a script, with all its direction notes," Prytherch continues. "…But that's only half the file. During the actual sessions people make notes about which takes we should be using, and there might be notes saying 'this doesn't work because of this, so we've changed it to something else'. When our tools take that file, because of the way those notes are written, we can import a lot of the data automatically."

A demonstration of the Lightning Fish asset process is one dimension to Prytherch's session at the Develop conference this year. Another is centred on roles within development teams – something else that he thinks film can contribute: "Those roles are not appreciated in the games industry, but we could learn a lot from what an Audio Director does, what a Script Writer does, and so on." And this is where the technology can help – by separating creative roles from technical roles, he thinks the industry can create better games. AM

INFORMATION

www.lightningfishgames.com

A New Era For Game Audio?

As technology improves, will this dampen or expand creativity in video game sound? John Broomhall looks at what the future might bring...

Over the last couple of years the vital importance of dynamically controlling and manipulating audio in complex ways at *run-time* in games has gained increasing recognition – re-creating, re-purposing, re-shaping, re-mixing, re-compiling, re-ordering, re-engineering 'on the fly' according to game events and conditions, narrative stages, and the player's actions – the equivalent of a fully interactive film mix.

Let's face it – it's not until fairly recently in games we've had enough raw computing power to play around with. Prior to the current generation of game consoles was a long period where significant disparities between the technical capabilities of PC, PS2, and (the original) Xbox made last-gen audio a headache for cross-platform developers. But today's major console games and cutting edge PC titles enjoy many less barriers to audio excellence. Practical issues over the control of audio can now be addressed in 'real-time' e.g., multi-band compression running 'live' can control dynamics. Then there are aesthetics – e.g., real world acoustics with increasingly high quality reverbs.

But there's also more potential than ever before for the creative, subjective, 'non-literal' use of real-time audio techniques with reactive, dynamic mixing, and constantly morphing DSP treatments changing focus and feeling, and providing character and story exposition. This can potentially lead to new expressions of creativity that go beyond film sound. Why shouldn't games build on and further develop their own audio language and grammar? Game audio had an *extremely* creative beginning when much of it was symbolic and figurative, limited heavily by very low-fi tech. Then as technology enabled increasingly better quality sound, and more of it, our attention turned to valiant scientific attempts to model and re-create the literal sound of the world, albeit often a larger-than-life or stylised version. That approach is of course, still valid and needs superb execution as a bedrock of soundscape. However, we also realise that in many instances, literal sound and a literal mix is far from what we want creatively – in dramatic terms. That's why we are figuring out and exploring how our linear mixing techniques, approaches, and workflow can be available and implemented as games are being played and in response to the 'live' input and actions of an unpredictable public. The rich heritage of movie sound creativity can always inform and inspire, helping us answer the all-important 'why' question – why should we change the sounds, the mix, the focus, the perspective?

John Broomhall.

Have we reached a new era in game audio? It's an alluring sound-byte. I think we are certainly entering an era where it's a given that we can, and will, have technical excellence and high fidelity with as many channels and as much run-time DSP as we need. In such an era, what will differentiate game soundtracks is the power of ideas. The creativity that's been with us since those early 8-bit days will continually find new expressions and take precedence over technology considerations. AM

John Broomhall is Audio Director and Consultant of Broomhall Projects Ltd. with 16 years of experience in video games. He will chair the Audio Track at this year's Develop conference.

Pushing the Boundaries of Games

Audio Media talks to DICE's Stefan Strandberg about ideas and vision, and the biggest gun shoot in the world.

DICE is a Swedish video game production company based in the nation's capital, Stockholm, whose fast paced Battlefield adventure games benefit from the skilled attention of Stefan Strandberg and his audio design team. Strandberg is the Audio Director on the company's latest release – *Battlefield: Bad Company 2*, as well as its numerically deprived predecessor – both of which are available for the Xbox 360, Playstation, and PC. Like many people who end up in the audio side of the video games industry, Strandberg was a musician first – but he was also a player of games too. "In the 1990s I started freelancing and I noticed that people actually bought my sounds and started hiring me for my sound design," he says. "So seven years ago I was hired by DICE." The company employs a crew of ten people working specifically with audio – three programmers and seven sound designers, each with their own area of expertise. "One specialises in voice over, one on the vehicles, and one on the ambience and so on," says Strandberg. "We work on everything from field recording all the way down to implementation – and everything in between. We do a lot of recording together with professional field recordists – here at DICE we are kind of rookies in that area! So we've gotten help from professionals within EA (Electronic Arts)" – of which Dice is a part. "We've worked with the EA people in the USA and some of the best sound recordists around – for example, on what I think was the biggest gun shoot in the world, we had 83 channels of recordings made with everything from small portable recorders and video cameras all the way up to the best microphones and preamps available. Equipment is secondary here; I'd say that ideas and vision and implementation are in the first room – rather than us being anal about equipment." However, Strandberg is at pains to point out that the company does take pride in delivering high quality content, but feels that his is an industry where the execution and the idea are more important than the equipment used. Having said that, suitable monitoring does play an important part in the audio design work. "We have Genelecs throughout the studio – I've always used the company's products," says Strandberg. "The 8030s – I really love those! They produce a perfect sound at the perfect level – you don't have to push them."

Strandberg says that his team "really pushed some boundaries in the audio department for a first person shooter" with the Battlefield series, and elaborates on the difference between creating audio for a game and audio for a movie. "The fundamental difference is that there is a player involved!" he laughs. "So if you don't give the player any feedback, they wouldn't be doing anything. The obvious answer is that film is a linear medium whereas games are a non-linear one – and one of the first problems you encounter is how to combat repetitions. You give the player a set of tools to interact with the game world – in our case it's a weapon – and the player is going to fire a gun one million times in ten hours. In a movie, every sound can be unique as it's only played back once! You have to create a non-repetitive soundscape using something that is by its very nature repetitive. You need to expand on how you perceive sound and present different, subtle layers of variation. You can still perceive that the identity of the weapon is the same, but there are changes in how it sounds in different environments, for example. The more freedom you give to a player the less control you have over the player's perceptions – you have to give them a toolset which allows them to identify with, and navigate through, the story." AM

Stefan Strandberg, DICE.

PERFECTION WITHOUT PUSHING

Solid design advancements with Genelec's 8000 MDE and 7000 LSE Series meet the demanding world of games production.

Finnish-based speaker manufacturer Genelec has spent decades measuring, analyzing, and calibrating its monitoring systems, both in its customers' working environments and the company's own testing chamber. Genelec believes that, as modern digital production environments become more commonplace and vast amounts of digital audio are produced, processed, and transported around the globe, that the addition of DSP (Digital Signal Processing) technology will allow speaker manufacturers to expand their toolset to reach 'a new target resolution for acoustic calibration of monitoring systems'. All rooms impart their own audio signature onto any monitor system – after all, a monitor is only as good as its acoustic integration into a room. The advancements Genelec has made in the development of the 8000 MDE series and 7000 LSE series products have provided significant performance gains, both in the test chamber and in conjunction with customer control rooms. Genelec's new 8200 and 7200 DSP Systems are based on the solid foundations of the earlier 8000 and 7000 series, and have been designed to be suitable for wide ranging applications such as post-production in film and video, large and small broadcast environments, and the demanding world of music recording, mixing, and mastering. An extremely powerful feature of the Genelec DSP systems is automatic calibration using the AutoCal™ algorithm which Genelec says 'provides the industry's first integrated process for the complete automated measurement, analysis, and adjustment of every speaker in the network, enabling the engineer to correctly integrate each speaker into the mixing environment.' AutoCal™ has the potential to save the user hours of work and provides well-balanced result in just a few mouse clicks. The company says that it is suitable for use even in the most difficult room conditions.

INFORMATION

www.genelecdsp.com

Mere Mortals

Jonathan Miller crosses the Tyne for a lesson in regional and international success across a range of disciplines – games, film, TV, web, and more...

Co-founded in 1999 as a partnership between David Jeffries and Graeme Love, Mere Mortals has grown, in part, into an internationally respected games company with an enviable reputation for the range and scope of titles developed on all major platforms, such as *Harry Potter Quidditch Cup* (modelled, rigged, and textured the Spanish team and arena for Electronic Arts) and PDC *World Championship Darts.*

Mere Mortals has evolved and expanded to its impressive current staffing level of 46 (in Newcastle-upon-Tyne) and eight (in New Zealand), thanks largely to the sterling stewardship of current Managing Director Steve Walmsley.

Big River

Walmsley took over as MD three years ago with, as he explains, "The specific purpose of converging three businesses together to create the conditions where we could grow."

"Three years ago there was also a separate web business, so three completely different independent companies run in three completely different independent ways with their own discrete client bases, I think largely driven by indications in the marketplace that we were moving more towards 360 delivery of services, whereby we could move across the games environment into web and TV seamlessly."

"Today we've got revenues of around £2.5 million; three years ago, as a Group, when you put the three companies together, we made just under £1 million... There would have been a certain amount of organic and inflationary growth going on anyway, but I think bringing the three businesses together has given us an extra dynamic, so that we can actually offer our services to other clients, whereas, perhaps, as three individual businesses, we weren't able to do that before."

The Mere Mortals Group of Companies' eye-catching North Eastern HQ is sited in The Old Forge within Hoults Yard in Newcastle-upon-Tyne. Originaly built for the Tyneside pottery Malings, Hoults Yard has been transformed from an industrial estate into a funky and flexible office complex.

It's easy to see the attraction for the likes of Mere Mortals. "The move to this building facilitated the acquisition of a local post-production company called Fine Cut Facilities," says Walmsley. "And also the starting of the web business... The move gave the space to be able to do that by putting it under one roof. I think the building adds to the creative process. You could never define this, but there is a bit of inspiration that comes from being in such a pleasant environment."

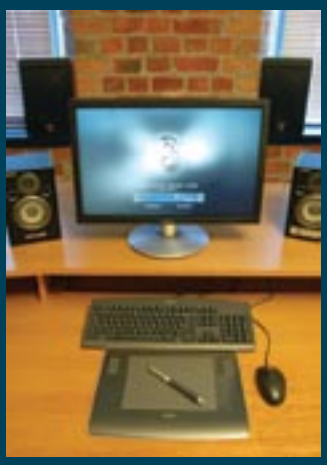
Forging New(castle) Relationships

There now appears to be something of a flood of media companies converging on Hoults Yard – fatfrog (www.fatfrog.eu), Green Media (www.green-media.com), Standing Stone Productions (www.standingstone.tv), Yipp Films (www.yippfilms.com), all following in Mere Mortal's footsteps. Walmsley thoughtfully views it this way: "The North East has always had a fairly buoyant creative industry – largely, it has to be said, based around the broadcasters... but the cutting back of ITV's output has significantly reduced the North East's creative industry. Yet there is very definitely a fight back, and Hoults Estate has become, I suppose, a representation of that fight back with smaller and larger media ▸

companies gathering on the site. And there's a lot to be gained from collaboration; as a company ourselves, we encourage other companies to come in and work with us."

Some from as far afield as New Zealand, even. In August 2007, Mere Mortals founder David Jeffries took the company to New Zealand in his new capacity as Strategic Development Director. Mere Mortals NZ has been established 'to deal with title progression', leaving Mere Mortals UK to handle new IP.

Why New Zealand? "Mere Mortals is a company competing in a global marketplace," explains Walmsley. "We had to pay attention to the fact that some countries – let's say Malaysia, Thailand, and China – were able to produce things more cost effectively than we could in the UK, just because of their lower cost economies, so we needed to look for somewhere where we could outsource and save costs. Interestingly, when we looked at China, we discovered that while you could save money on labour costs, you often found that your management overhead in the UK climbed, because you were managing such a remote facility. Also, there were some significant cultural barriers to working in places like China and Thailand – language being top of the list. When we looked at New Zealand we had, probably, about a 30 percent saving in terms of cost – not enormous, but because we didn't have all the cultural barriers we considered it a nightshift solution rather than outsourcing to a low-cost economy. It works very well for us, and gives us 24-hour operation, which is very effective."



United Colours Of Audio

The company actively encourages collabortaion, idea sharing, and social interaction between staff across the company – it's a strategy with a goal of increasing creativity. And audio, of course, can contribute to driving those creative dynamics. Walmsley: "Audio does actually go across all three areas – very much so; strangely enough, the audio team have probably been more involved in that cross-company activity – right from the start, because our games team needed audio, as did our web team, so they'd always actually focused on audio, whereas, perhaps, the web team wouldn't necessarily need as much contact with the games team in terms of the visuals. Audio was a place that everyone was familiar with."

The team at Mere Mortals.

Mere Mortals' Michael Coates – former Final Cut Facilities 'last man standing' – concurs: "Certainly I think the guys in the games side of things find it really useful, because in the past they would maybe have had to buy a load of CDs themselves, then search through them to find the sound effects they want and drop them in, but now they benefit from having broadcast-quality facilities in the next room, so you get the guys who are actually coming up with the ideas and programming the games being able to sit in the studio at no extra cost to the company, because we've got those audio facilities. Even without final renders, we can get source files fired across the network, and, because it's Pyramix, which is obviously very video-based as well, the games guys can render a QuickTime, AVI, MPEG, or whatever, and load it into Pyramix, so we've got something to work with straight away – even if it's just adding or trying out little things."

Perhaps, then, the secret of Mere Mortals' success is that creative cross-company, cross-pollination of ideas, which in itself begs the question that Walmsley willingly poses: "Does Mere Mortals specialise in anything in particular? Well, the answer to that is, 'Yes; we specialise in an awful lot of things.' But, more than having specialist audio engineers, editors, 2D and 3D artists, so we can service clients who just specifically need those individual discrete items, I think it's the added ability to be able to see the bigger picture – how all these things connect up. So, for instance, we can take a media artefact – an asset of some description, and, provided that we're aware that it needs to be used across a variety of different platforms, we'll engineer or create it to be used in a number of different platforms, so, therefore, there's a cost saving there. You've really got to be aware of where your audiences are; there's no point in producing something and putting it on a platform if there's no audience at the end of it, so the three main ways of reaching the audiences that our customers are trying to reach are through games platforms, the web, and TV. Of course, the interesting thing about TV is that IPTV is becoming a stronger contender – same production values, in terms of the quality and creativity of the TV asset, but it's just a different delivery mechanism."

To a certain extent, the same can also be said about the games industry, which is where we started. Walmsley signs off with the following food for thought: "For the foreseeable future, there will be a need of a large body of consumers out there to have their own platform and to be able to buy boxed games, but it will change – undoubtedly, and, of course, it's part of our job to keep ahead of that curve and to try and predict where things are going."

Onwards and upwards for Mere Mortals, most likely. And on the strength of the evidence so far, why not? It's a creative goal for Newcastle, that's for sure – with a little help from those friendly New Zealanders.

FINE CUT

When launched in 1988 by ex-BBC Look North newsreader John Kyle and business partner Colin Bone, Newcastle-upon-Tyne's Fine Cut Facilities started life in the spirit of 1980s entrepreneurship, providing stable employment for 15-plus people during its relatively long lifespan, as well as being the first North Eastern UK post-production/editing company to embrace several new technologies, including Avid, AudioFile, Betacam SP, and Digital Betacam, to name but four.

However, come 2005, and Fine Cut Facilities was no longer the cutting-edge proposition it had once been. Michael Coates, who had joined Fine Cut fresh from Bradfor University recalls: "The sound guy went to a different company, and they made an offer for the AudioFile, so they literally bought the sound studio out from under us... When Mere Mortals came in with an offer for Fine Cut, the company had shrunk from six members of staff to John and myself, though John didn't work much anymore. My boss said, 'Yes, but you have to take Michael with it.' Basically, I was purchased! Mere Mortals' Operations Director Mick Stockton used to ring me just to check I was alright... I was literally padding around this big post-production facility on my own."

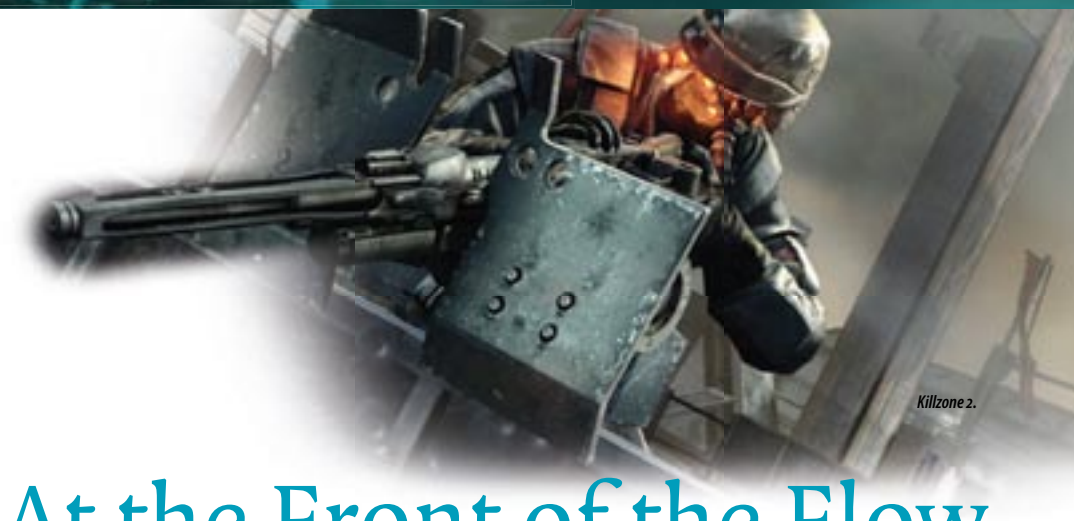
Things took a considerable turn for the better when Coates carried Fine Cut Facilities' remaining equipment over to Mere Mortals' more salubrious surroundings of The Old Forge: "In the process of that switchover, Dave McPhee came up from London as our new Head of Post Production – he was a sound engineer as well, and basically got the very enviable position of building a new studio for himself."

Enter the likes of Merging Technologies' thoroughly modern Pyramix Virtual Studio and VCube – together with a Yamaha 02R96 automated digital mixing console, 5.1 surround monitoring, CEDAR Tools Auto Dehiss, and upmarket outboard from TC Electronic and Solid State Logic – and more besides. "It's not Dave's dream studio," Coates concedes, before adding: "There were obviously budget restrictions, but the audio suite was built to his spec. Getting the sound booth in was, I think, the most challenging aspect, because this was just open office space, and we've turned it into a post-production facility."

The varied services since being offered include – but are not limited to – broadcast dubbing, voice recording, dialogue replacement, track-laying, ISDN sessions, radio commercials, television commercials, sound design, location recording, and podcasts.

INFORMATION

Mere Mortals Group of Companies
0191 224 2333
www.mere-mortals.com


Killzone 2.

At the Front of the Flow

Richard Aitken, Production Director of forward-looking production company Nimrod, talks to Audio Media about how they've made a name for themselves.

Nimrod is a British-based audio production company formed by Marc Canham and Richard Aitken in 2001. Nimrod has its feet in music, film, and TV production, but has also made a name for itself in the video games industry with its work on the likes of *Killzone 2*, *Far Cry 2* and the *Wii Fit* series. "We are a major outsource company, mainly in the games industry," says Aitkin, the company's Production Director. "We have a studio which is both digital and analogue – we have a big Neve V Series console alongside various Pro Tools and Nuendo rigs. My background is in mathematics, but both my partner and myself have always had a massive passion for music." A record deal with EMI in the early 1990s didn't make Aitkin a star – but it did provide funds for him to equip his own studio. "I thought video games were going to be the next big thing. At that time, the production quality of the music was quite poor – though the writing quality was usually high. I wanted to challenge that and use professional recording techniques in the video games industry."

Aitkin was drawn to Focusrite's emulations via his interest in numbers. "I first started using Liquid technology because, as mathematician, I like convolution!" he laughs. "So as soon as it became available I decided to give it a shot – especially as I wanted to try and recreate some of the sounds of the older gear. I do own some classic equipment and a range of high quality outboard, like the Massive Passive and Distressors, but I wanted more of a flavour of other equipment – and the Liquid Mix gives me that." Aitkens's first experience of Liquid technology was with the company's Liquid channels. "I still use a Liquid 4 pre which I really like and, while it's not exactly the same as using racks of old gear, it certainly takes up less space and is more cost effective. In my business, we're often asked to produce music with a 'date specific' feel – someone might say ' I want a 1970's funk piece', for example. Obviously, the best way to make it sound truly authentic is to use the same gear that was used to record the original material – but the Liquid Mix gets you most of the way there."

Richard Aitken, Production Director at Nimrod.

Aitken started using the Pro Tools HD version of Liquid Mix as soon as it became available. "It was an obvious choice for me and I use it almost exclusively now – I don't need to mess around with compensation any more," he says. Having access to some of the equipment on which the emulations are based, Aitken took the time to do some comparisons between the two. "I have done some comparisons – I compared Manley's Massive Passive with Liquid Mix and it was as close as you could get when taking into account the phase changes of converters," he says. "On the whole you can get the same flavour of classic gear with something like Liquid technology. It's always nice if you can be an audiophile and always use the best of the best, but sometimes you just need to get the bloody job done with a certain sonic flavour! If I need a Fairchild 660 sound I can just dial it in – and, for me, the best emulation is on the Liquid mix. I also like the fact that the graphics on the LM don't in any way pretend to be the original equipment – you have to just use your ears." Aitken sees convolution techniques playing an important part in the future of emulation technology and for now, the Liquid series are his weapons of choice.

www.nimrodproductions.com

FOCUSRITE'S FLUID TECHNOLOGY

Liquid Mix allows users to easily go with the flow, to make the most of their creativity.

Focusrite's innovative Liquid technology first appeared on its high-end microphone preamplifier, the Liquid Channel that, for the first time, allowed the engineer to select from a variety of emulations of classic equipment.

Since then, the technology has appeared in a variety of formats, including the company's successful desktop-based mixdown units, the Liquid Mix, and Liquid Mix 16 – the latter being a particularly inexpensive way to take advantage of Focusrite's emulations. The latest iteration of Liquid Mix software, Liquid Mix HD, runs on DigiDesign's Pro Tools HD TDM hardware. Liquid Mix already ships with a wide range of emulations, but Focusrite has continued to make more available for free via download – the latest of which are the API 2500, Empirical lab's Distressor, MIllenia'ss STT-1, and the Chandler Limited Passive TG Channel MKII Abbey Road. Focusrite's commitment to its customers also extends to the provision of an emulations and settings database – 'Liquid Assets' (located at www.focusrite.com/support/liquid_assets/) where users can share snapshots and also review the actual names and descriptions of the different emulations, along with a summary of their history, their potential uses, and why they were specifically chosen for emulation. Focusrite's Liquid Mix preamplifier range has expanded from the original Liquid Channel to the Liquid 4PRE, which, as its name suggests, features four channels of preamplifier emulations. There's also the Liquid Saffire 56, a FireWire interface with two 'liquified' preamps, six Focusrite mic pres, plus SPDIF and ADAT inputs. Most recently, the company has introduced Liquid Mix|HD – a Pro Tools plug-in with the Liquid advantage. Though the number of emulations and adjustable parameters are limited compared to the company's flagship products, the Saffire should allow more users to benefit from the company's excellent Liquid technology.

INFORMATION

www.focusrite.com

Mission Against Terror (Kingsoft).

He's Behind You...

Dolby has been behind the most significant audio revolutions in media since records began. Now it plans to do the same for gamers, with a new technology called Dolby Axon.

Very recently, Dolby announced the first commercial implementations of its Dolby Axon integrated voice communication technology. *Jumpgate Evolution*, an MMOG by NetDevil based around an immersive, persistent universe with spaceship pilot characterisation, and *Mission Against Terror*, an online FPS developed in China by Kingsoft Dalian JingCai Studio, both treat players to the realism provided by high quality, 3D-positioned online comms.

Online gaming has become a huge phenomenon over the last decade with voice-comms a vital part of the multi-player experience. Most games now have Dolby surround sound, and most now have an online component. You'll hear footsteps, gunshots, and explosions in surround sound often tied to a character or player. But when another person online talks to you, it is often low quality and comes directly from the centre channel as a mono experience. Dolby looked at this as a problem that it could solve firstly through surround sound and because of its expertise in signal processing – it could make the experience better.

Jumpgate Evolution (Net Devil).

Dolby Axon is a scalable integrated voice communication solution which the company thinks will raise the bar for voice communication in online games, allowing thousands of players to communicate and remain involved in the game – not alienated by the traditionally weak link of voice comms.

The basic problem is that there are lots of stress-points in the system. You have players using mono headsets and low quality microphones, the codes aren't very good, and there is also the issue of people who have their microphones settings too low or too high. The results even on relatively controlled services such as Xbox Live are clipping, distortion, and microphones picking up echoes: essentially an audio mush. Talking to developers, Dolby heard a lot of complaints about online voice quality and decided this was a perfect opportunity for it to solve an industry problem.

In addition to basic 3D positioning, Dolby Axon provides volume attenuation with distance, and occlusion (muffling when obstructed). There's also a volume leveller that normalises the signal from different players, so no one is significantly louder than anyone else. The advantages are obvious when it comes to things like FPS games – you hear enemies and team mates' voices coming from wherever they are standing; and enhancement of directional clues in the gaming experience is effectively an enhancement in the gamer's experience.

Dolby's Matt Tullis (Director, Dolby Games Group) told Jerry Ibbotson in *Audio Media*, April 2009: "We think it really shines in first person shooters – anything that requires co-ordination with other players."

Equally enthusiastic were the clients. Pak Kwan Kau, Executive Director at Kingsoft (Mission Against Terror): "Kingsoft is proud to have worked closely with Dolby in making Mission Against Terror a premier online game for the Chinese market through the incorporation of Dolby Axon… Players will now be able to use voice and hearing as a new element of the game-play by understanding the position of team-mates and adversaries."

Hermann Peterscheck, Producer at NetDevil (Jumpgate Evolution) said: "Dolby Axon offers us the highest quality 3D voice communication system available for our title. Dolby is a leader in audio that has shown a commitment to improving the voice chat experience in online games. It is cost-effective and we are excited at the great new game play experience Dolby Axon will offer our users."

With thanks to Simon Arnold, Marc Langsman, and Matt Tullis.

INFORMATION

www.dolby.com

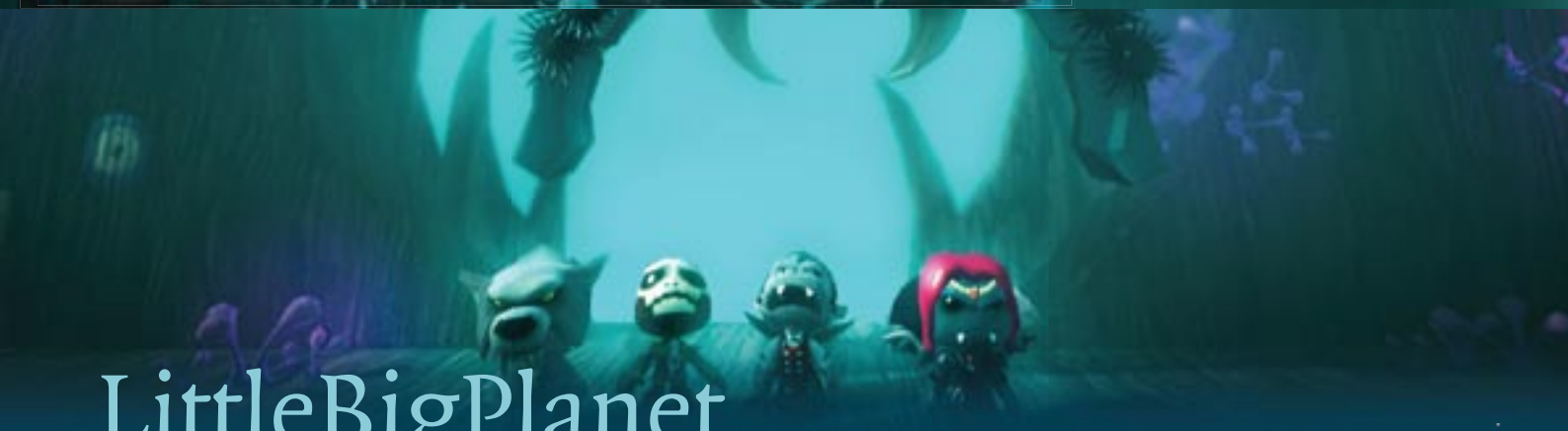
Dolby's Simon Arnold and Marc Langsman will be hosting a session at this year's Develop Conference, Brighton, and explaining more about Dolby Axon, and Dolby's new Pro Logic innovation – Dolby Pro Logic IIz (inclusion of height channels for up to 9.1 playback).

THE DOLBY EXPERIENCE

DOLBY

PLAY SMARTER.
PLAY IN SURROUND.

Dolby is the global leader in entertainment technologies – at the movies, at home, or on the go. Since 1994, Dolby has leveraged its expertise in high quality audio to elevate the game-playing experience. It therefore makes complete sense that the surround sound specialists who bought cinematic surround sound to games with the integration of Dolby surround sound in consoles, is targeting online gaming.



LittleBigPlanet

Who'd have thought a platformer could wow the modern games world in the way LittleBigPlanet has? Paul Mac talks to Media Molecule's Kenny Young about audio's contribution to the Sack Boy sandbox.

Media Molecule is an independent developer with just under 40 staff, formed in 2006 by ex-Lionhead employees, off the back of an initial independent success with a game called *Rag Doll Kung Fu* – mostly credited to Mark Healey. The team behind *Kung Fu* approached Sony with the outline of another game, but this time with a Sack Boy: *LittleBigPlanet*.

In the strangely unreal realism of the game-world, the irresistible cuteness and innocent personality of the oft-abused Sack Boy, the vastness and variety in the main game and online community, and audio support judged to perfection, and you have one of the Playstation 3's biggest software assets to date. However, try explaining LBP to anyone who hasn't actually played the game and the conversation inevitably ends: 'Look, it's hard to explain – you just have to play it to understand.' But then, a degree of exclusivity is how vibes are created.

Planet Audio

Media Molecule was about 30-strong when *LittleBigPlanet* development was in full swing, but since that time the ongoing commitment to additional content for the game and number of other 'secret projects' has swelled its numbers.

Kenny Young is the audio guy at Media Molecule – he works with Matt Willis, the Audio Programmer. "I'm the audio creative on the team," expands Young. "I make sure that, even if I'm not creating the assets myself, I'm commissioning composers to write the music or getting in freelance sound designers to help." For *LittleBigPlanet*, Young was responsible for all the original sound design, and some of the original music.

Kenny Young

The music in *LittleBigPlanet* (a mix of original and licensed) draws inspiration from the main theme of the game – a trip around the world. The tracks are created and chosen to relate to the region being represented. "The general direction I took was to embrace the slightly eclectic presentation of the game," Young explained. "And because the game's about letting players create their own things using the tools we've provided, they need a big library of tracks so they can find something that fits the style or the emotion of the thing they're creating."

To this end, another strategy for the music content was to make sure that no two pieces of music stepped on each other's toes. One example is the game's Mexican theme, where the spaghetti western genre, Mexican Rap, and a licensed track from the "Mexican equivalent of U2" are all featured. The game gave Young the opportunity to "play against people's expectations". Certainly a driving game or high-drama shooter could not get away with such liberties.

Players can also pick up a variety of sound objects to incorporate in their own levels. In fact, there's a whole subset of player-created levels dedicated to playing music, with such ingenious contraptions as triggers and sequencers used. Young predicts a greater number of these sound objects for the future.

Bing Or Bong?

As mentioned before, Young was wholly responsible for the game's sound design. It would have been easy for Young to get away with some very cartoony and clichéd boings, beeps, and bangs, but it would have been a very poor relation to the brave realism the audio actually brings to a small cloth-man exploring places made from craft table off-cuts.

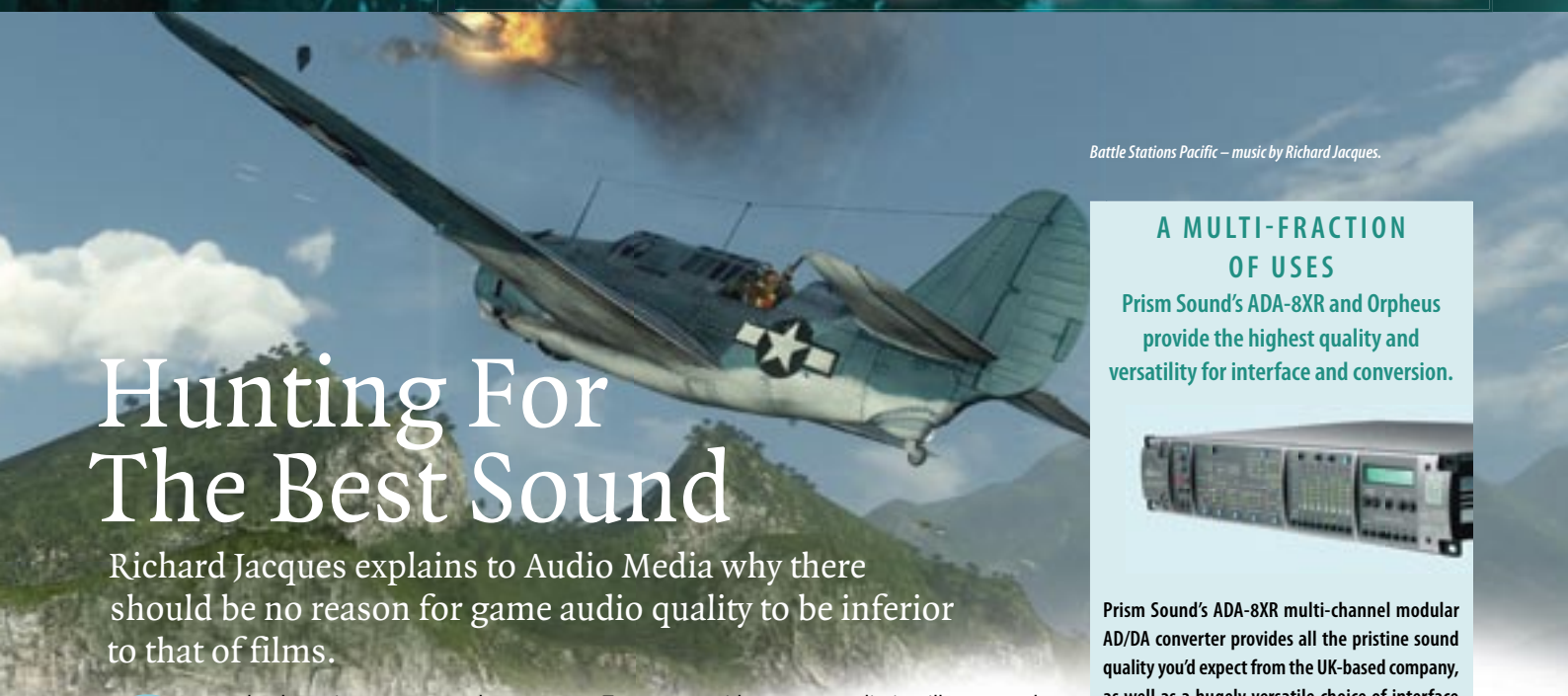
Young explained that there were two distinct types of sound to be considered. The first deals with reality: "We have a bunch of objects and actions that happen in the game, which are meant to be realistic – or at least plausible – and sound like they might sound in the real world. An example of that might be the physics sounds… So whenever a bit of polystyrene lands on the ground it makes an appropriate kind of polystyrene chunk sound. You can't get a good polystyrene sound in a library, so that needs to be custom recorded by me in the studio to fit the implementation of the sound in the game." It sounds simple, but there's a lot of pressure on every sound in *LittleBigPlanet* as it relies very much on the movement of discrete objects, mostly without the convenient cover of wall-to-wall ambience and incidentals.

This pressure increases when you consider just how much the audio contributes during player level construction – itself an integral part of the game. Young: "It's nice to have a piece of wood or metal feel like a real piece of wood or metal… When they're building something and they're clattering bits together and cutting them up, that all has to feel just right."

On the other side, there are what Young terms the 'game-play sounds'. "They don't really happen in the game world. They happen maybe somewhere in the orchestra pit alongside the imaginary orchestra. The user interface sounds are another good example." In this area, Young is freed from the constraints of the real world, but the sounds still have to fit the game. It's this part that Young (as most of us would) has difficulty defining: "I wanted them to fit the game, but quite how to describe that, I'm at a loss." This is not an uncommon *LBP* problem.

INFORMATION

Media Molecule www.mediamolecule.com
Kenny Young will be speaking at the upcoming Develop conference in Brighton.
***For an extended version of this article, download the Special PDF at* www.audiomedia.com**



Battle Stations Pacific – music by Richard Jacques.

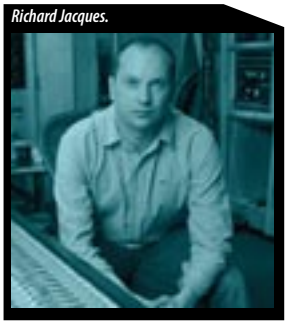
Hunting For The Best Sound

Richard Jacques explains to Audio Media why there should be no reason for game audio quality to be inferior to that of films.

Over the last sixteen years, the name Richard Jacques has become synonymous with high quality video game music. Richard started out in the industry as an In-house Composer and Sound Designer at SEGA Europe, working on titles including *Sonic, Jet Set Radio, Daytona* and one of his personal favourites: *Headhunter*.

In 2000 he went out on his own and formed Richard Jacques Studios, based in South London. The key areas of the business are music composition (with an emphasis on orchestral music), recording, surround mixing, and music licensing. He's in great demand from some of the world's top games developers and publishers to deliver in-game music with the same sound and quality as a blockbuster movie. It's no wonder the walls of his studio are covered with awards.

He's been using Prism Sound products for years and first used the ADA-8XR converter when recording the music for *Headhunter:* an 86-piece orchestra at Abbey Road. This was the first time the famous studios had been used to record games music in this way. The ADA-8XR had just been launched onto the market, and Richard was one of the first to get his hands on one, direct from Prism Sound. In Richard's own words it sounded "mind-blowing". The game, and its music, went on to receive critical acclaim and won a place in the hearts of gamers the world over. As a footnote: the Abbey Road engineers were so impressed that they kitted out every room in the building with one.



Richard Jacques.

So why go to such lengths to record games music? Why orchestrate and record a full-blown orchestra when so many sample libraries exist? To many outsiders, game audio is still very much a bedroom business, with practitioners seen as keen amateurs. Richard is keen to scotch this myth from the start. "There's no reason on earth why game sound should not be as good as that found anywhere else," he said. "If I'm sat at home watching a DVD or Blu-ray movie playing on my PS3 or 360, it will sound good. If I then take that disc out and start playing a game, which had probably cost me a lot more to buy, I want it to sound just as good."

Mass Effect – music by Richard Jacques.

He's seen a lot of changes in the industry over the last few years. "The technology has really moved on, allowing us to do what we really want to do. Not just in terms of sound quality, but in real time mixing and effects, giving the best possible overall sound to the player. I always want to do the best I can but in the past the limits of the hardware could hold you back. That's no longer the case."

He's currently working on a major project that he's keeping under wraps for the time being. But he says the demand for complex interactive musical scores is higher than ever. "With respect, it's not something a lot of film or TV composers would be able to do; compose and orchestrate music that changes according to the actions of the player. Some have tried but over the years we've proven ourselves. I have just about every musical sample library going, but I still believe that nothing beats recording a live orchestra to bring the very best sound to a game. We're using Prism Sound kit all the time. At first it was quite groundbreaking but today it's a given.

A MULTI-FRACTION OF USES

Prism Sound's ADA-8XR and Orpheus provide the highest quality and versatility for interface and conversion.

Prism Sound's ADA-8XR multi-channel modular AD/DA converter provides all the pristine sound quality you'd expect from the UK-based company, as well as a hugely versatile choice of interface and conversion options. The unit can be configured as a 16-channel AD converter, a 16-channel DA converter, or an eight-channel AD/DA converter. It doesn't stop there though. It can also function as a multi-channel FireWire interface, an AES/EBU/AES3/SPDIF digital to analogue or analogue to digital converter, a high resolution Pro Tools interface, or as an interface for a wide array of other DAWs. The 8XR is ideal for music and sound recording, mastering, broadcast, and post-production, and has been used in many of the world's most revered studios.

Providing a more affordable opportunity to harness Prism Sound's world-renowned audio quality is the company's new Orpheus FireWire recording interface. Its design philosophy is a no-compromise approach to providing the best sound quality available. The company stated its mission was to, "Get Prism Sound quality conversion and mic preamps into a 1U box at a more accessible price point." The dedicated FireWire interface is compatible with both Windows and Mac OSX, and offers four integrated mic pres with switchable phantom power augmented by eight premium-quality AD and DA channels. For added versatility, output can be selectable between workstation bus or the Orpheus mixer itself.

INFORMATION

www.prismsound.com

Game Sound Special

Play TAG

Forza Motorsport 3.

Stafford Bawler has recently joined The Audio Guys as Lead Sound Designer and already has Forza 3 under his belt. PAUL MAC talks games, cars, and normally aspirated trumpets.

Many might well kick themselves in the marketing department when they hear someone refer to 'the audio guys' and realise that no matter how or when you say it, you've got to check yourself in order to work out if you're talking about people in general who do audio, or The Audio Guys… who also do audio. Recent game credits for the company include *Virtua Tennis 2009* (SEGA), and *Overlord II* (Codemasters); but it's in the numerous driving game credits that TAG seems to have found a particular niche. *Ferrari Challenge* (System 3), *Sega Rally 3 Arcade Machine* (SEGA), and *GTI Club+ (Konami)* are amongst the list, and most recently it took on the formidable new Xbox 360-only real-racing title *Forza Motorsport 3*, published by Microsoft Game Studios and developed by Turn 10 (a Microsoft development company).

The Audio Guys is an audio outsource company founded by ex-Codemasters operatives Tim Bartlett and Dan Gardner in 2006. So the car specialism is hardly surprising, as that is the stable that brought us the Colin McRae Rally series – commonly blamed for a continuing insistence to shout, "three left... two right" on the way to the supermarket.

Stafford Bawler, Lead Sound Designer at The Audio Guys.

Now the company has a regular team of six people, although there are no central premises. All contributors work from their own homes – equipped with the necessary audio bits, plus Sony, Microsoft, and Nintendo dev' kits. The most recent full-time appointment has been Stafford Bawler, into the position of Lead Sound Designer.

Stafford had actually been working with TAG on a freelance basis since late 2007, a relationship made more permanent earlier this year. It was Stafford that did most of the work on the *Forza 3* title – designing the all-important engine sounds for the game.

Stafford has been in the industry for about 12 years, formerly working for another development house that got into trouble and had to let staff go, and subsequently for Codemasters, with Bartlett and Gardner. Before that, Stafford cut his musical teeth on electronic keyboards and an old Atari ST, playing at raves and small festivals, alongside an early multi-media degree. "I don't do any music composition or creation these days for my work – it was more a sort of gateway," explains Stafford. "…These days I'm purely into designing sound effects and sound systems for games. I'm very passionate about car audio as well – quite a petrol head, and very much into recreating all the idiosyncrasies of car engines. They're like a horrendously complicated musical instrument."

That's a small insight into Stafford's approach to car sounds, but something more practical? Stafford: "The starting point is finding a car to record. That can involve contacting owners clubs, posting on Internet forums, or – if it's a racing vehicle – contacting the works teams or chasing down privateers.

"Then you have to get it onto a dyno' [rolling road]… Good dynos in sound proof environments are few and far between. They're mostly in the midlands, like MIRA. I think we've used Milbrook once as well."

Stafford takes with him a fairly standard kit-bag: two Edirol R44 recorders, and a selection of DPA mics (including the 40 series miniature mics and 4011 standards). "The great thing about the DPA mics," volunteers Stafford, "Is the fact that they can handle so much level. Cars are horrendously loud and in the early days when we were all learning how to record cars for games there were many problems with mic distortion."

As far as mic positions are concerned, there's a few standard ones that Stafford would always explore. "The two places you want are the engine and the exhaust, because they're the significant sound sources. But we tend to focus in on more detail. With the engine bay you usually want to get an ambient recording – a mic hung over the top of the engine – and then you want to get an induction recording as well… If the car's normally aspirated you'll have a mic right up to the trumpets, or if it's turbo charged, near the turbo.

"It's all down to listening to the mix on the day really. I don't want to give too much away – some things we want to keep secret!"

The outsourcing business within games is, according to some, coming into its own. Developers don't have to commit to large staff counts for single projects anymore when there are service providers like The Audio Guys about. Stafford recalls his time at a full service developer: "Whenever there were worries about money, you could see HR people eyeing up the swollen teams left over from big projects… it was always a big worry.

"And it's only going to get more difficult as time goes on and as the technology improves. The amount of time needed to create games increases, and so do the man hours and numbers of people required, so the costs are continuing to sky rocket." Stafford likens it to outsourcing per film production projects – the reliance on specialist talent outside the core production company's staff list that makes good financial sense. And bodes well for The Audio Guys. AM

INFORMATION

www.theaudioguys.com

For an extended version of this article, with more detail on the Forza 3 project and Stafford's preferred kit-list, visit audiomedia.com and download the Games Special PDF.

Yoan Fanise working on Foley.

Of Aliens, Apes, and Psychotic Rabbits

When you get to do the Foley for a rabbit that burps so loud, Paris crumbles, and enjoys taking on the world with only sink-plunger guns to work with, you know you've made it. Yoan Fanise talks to Audio Media.

Yoan Fanise, Audio Director, has been working in game audio at Ubisoft since 2001, starting with the acclaimed *Beyond Good & Evil*. He's worked on plenty of games since, such as Peter Jackson's King Kong, which gathered multiple awards for its audio content and had its sound effects approved by the WETA Workshop team several months before the film's audio post was done. That game was especially notable for its early use of dynamic group mixing in-game.

Yoan is still very proud though of the *Beyond Good & Evil* work which, he says, overcame a lot of PS2 graphical limitations by making up for it in the immersive audio experience, with detailed, streaming atmospheres.

Most recently though, he and his team have been working on the incredibly successful *Raving Rabbids* series, derived from the Rayman franchise, and is, as you read, working on the next incarnation: *Rabbids Go Home*. The beauty in the Rabbids audio is the comedy it brings to the game, complementing the very silly antics of the cute yet psychotic Rabbids. Their signature "Bwwahhh!!!" scream and huge range of cartoon-like 'almost-dialogue' comes from the mouth of one Yoann Perrier, a Graphic Programmer at Ubisoft. "I give him ideas, sometimes with French dialogue, and record one minute of each small expression. We cannot work for more than an hour as he loses his voice." Sound Editor Jean-Marie Viollet then does a massive edit job on the recordings, and leaves the rest to a three semitone pitch rise (the only processing necessary). In 2006, *Rayman Raving Rabbids* scooped the IGN Game Of The Year Wii Awards trophy for Best Use Of Sound.

The studios at Ubisoft's Montpellier, France, studios consist of three isolated rooms, including a main recording area where the voices and Foley are recorded. Equipment-wise, the main weapon is Steinberg's Nuendo. Previously a Pro Tools user in film post, Fanise switched to Nuendo for game sound. "It was a huge saving of time and money," he says. He cites many reasons for the choice, such as the range and cost of plug-ins, and the freedom to choose any hardware he wants to accompany it. However, he does mention the calculated bouncing and ability to open several sessions simultaneously as the two biggest draws. His day is no longer punctuated by waiting for bounces after changing small elements in layers. Fanise claims to have 'converted' quite a number of colleagues to the Nuendo way. His current controller is a Mackie Control, and the other equipment around the studios includes an AKG C414 and SPL GainStation (with AD conversion) combination – a set-up that Fanise prefers as he can move it around without worrying about inferior interfaces on other systems. There are no such worries with the studio's RME Hammerfall interface. Monitoring options are Tannoy Reveal Passives, Adam ANF10s, and Audio-Technica headphones.

Fanise has a number of favourite plug-ins, including the PSP mixpack and PSP master Q (with the mix saturator pulled out for special praise with regard to dealing with fast transient Foley work), and the SIR Convolution reverb plug-in. He has recorded his own substantial library of impulse responses for the latter. AM

INFORMATION

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INFORMATION

Steinberg www.steinberg.net

SSL Vocalstrip

SSL's Duende finds its voice with a long-awaited vocalstrip plug-in. RICHARD WENTK takes it for a yodel.

THE REVIEWER

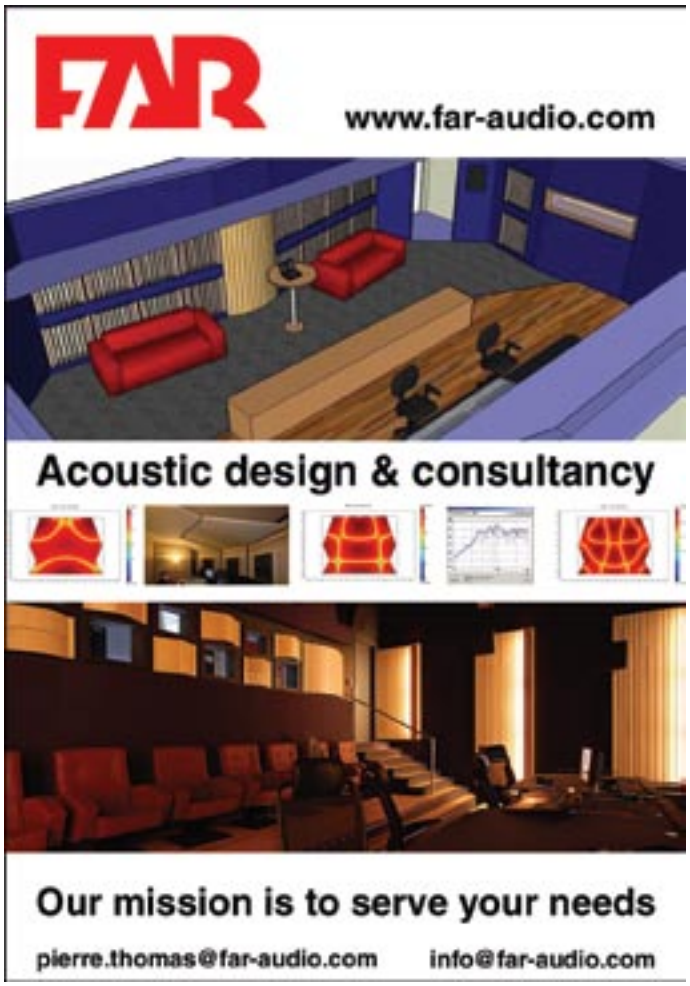
RICHARD WENTK is the owner of Skydancer Media, a digital production company providing sound, image, design, and consultancy services to various clients in London and the West Country.

There's no doubt that Duende has been an impressive success for SSL, packing most of the SSL sound into an affordable and accessible format. But given SSL's reputation for pop mixing and tracking, the absence of a vocal processor in the plug-in range has been obvious. Vocalstrip was announced towards the end of last year, and is available as an optional extra for owners of any Duende hardware model, and also as part of a comprehensive plug-in and hardware bundle available for both the PCI-E and Mini Duende processors. If you want to try it out before buying, a 10-hour demo is available as part of the Duende software installer. As usual for Duende demos, the clock only counts down while audio is being processed, so this is a generous try-out period.

The on-screen design has the same look and feel as previous Duende processors, with curvy buttons that 'light up' when clicked. Input and output sections include a gain setting each, and also use Duende's very useful dynamic bargraph display system, which simultaneously shows peak, average, and approximate dynamic range settings.

Power Of Four

There are four processing sections, including a compander, EQ, a de-ploser and de-esser, and one display area. The processing order can be changed by selecting one of the processors on the flow diagram at the bottom and clicking << and >> buttons to move it – which



Quiet interiors just got quieter
The OSIX Suspensions
Vastly reduce handling noise, are very light, have smaller shadows and need less headroom
RICHMOND FILM SERVICES

does the job, but drag and drop would have been simpler and more intuitive. Sections can also be switched in and out individually, so if you only need a de-esser, you don't have to use the other sections. This has no effect on Duende's internal processing assignment – Vocalstrip uses a single processor slot no matter how it's set up. But it may make a difference in the forthcoming Duende 3 update, which uses SSL's Hybrid processing to share the load between the Duende and the host machine.

Comprehending The Compounder

The compander has a comprehensive set of controls that include attack, ratio, threshold, and release for the compressor section, an expander with a variable threshold but preset dynamics, and gain makeup. A 'drive' button adds a hint of sweet-sounding distortion that thickens out the sound. You can also select hard and soft knee curves. A 'bargraph' display indicates how much compression is happening and how open the expander is. The sound isn't quite clinical, especially with drive selected, but it's not as overtly transformed as it is with the Buscomp and Channel Strip Duende plug-ins. It's certainly easy to make lines sound thicker and richer, and also to tame performances so they can bed down in a mix.

The EQ section is a three-band design with a low-cut, tight mid parametric and a looser high parametric. It's a basic design, which seems to have been picked from typical user choices for vocal EQ, and it covers the bases. But more flexibility in return for smaller on-off buttons for each stage would have been welcome. Arguably a hi-cut or a shelving stage would have been useful at the high end, and Q control would certainly have been appreciated on all of the stages. But it's still possible to make both creative and surgical adjustments, and the sound is fairly smooth and unobtrusive. If you need more versatile EQ you can always use one of the other Duende plug-ins. But because this has to happen outside of Vocalstrip's processing chain, it's not quite a drop-in equivalent. And there isn't, as yet, any way to cross-route or patch between plug-in subsections on Duende, or to set up sidechains.

Quicker, Quicker..!

As a useful extra the display section can be made to show pre- or post- FFTs, which can help with fine-tuning the EQ. The FFT update rate isn't quick enough to catch fast transients, but it can display potential problem areas on slower vocal elements. There's also a dynamic amplitude graph, which can give you some clues about how aggressively your vocals are being treated. (There isn't, unfortunately, a self-destruct button that turns off all processing when there are no dynamics left at all.)

The de-esser and de-ploser are more hit and miss. As always, they're available to compensate for the compressor's tendency to magnify unwanted consonants, turning a smooth vocal performance into a hiss, spit, and pop fest. But the active frequency ranges are preset, which means they're less versatile than a complete sidechain. To be fair you get two processors, which is generous and more than you'll find on most consoles or outboard boxes. And the dynamics are dynamically calculated, which means that in theory you don't need to set them by hand.

But in practice some vocal lines could be treated effectively, while others were more challenging. A low and breathy trip hop vocal with a heavily aspirated 'You' fell between the two active frequencies and couldn't be tamed. This might not be a common problem, but a tuneable sidechain would have made light work of the problem. On other material, the de-esser seemed to work smoothly, but the de-ploser had a tendency to click when used more aggressively, and was perhaps more effective on spoken voiceover material than sung vocals. Some fine-tuning of the dynamics might be worth considering for the next update.

Theory Vs. Practical

One other limitation is that Vocalstrip is mono only. In theory this makes sense, but in practice it means you're limited to solo vocals, and these have to be processed before you add reverb and other effects to them. Compressing a line with reverb already added is sometimes useful, so this is a limitation. It would have been good to have the choice.

Overall, it's possible to get an excellent variety of vocal stylings out of the Vocalstrip, from traditional ultra-compressed breathy female bvox to aggressive male growls and snarls. I'd like to see a little more versatility and user control in some of the sections, but Vocalstrip is still a fine addition to the Duende range and an essential purchase for anyone who works regularly with either spoken or sung vocal material.

INFORMATION

£ GB£199.00 (exc.VAT)

Ⓐ Solid State Logic
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The Sound of Change

It's all new at Molinare...

A new phase has begun in the long life of one of London's leading post houses. KEVIN HILTON talks to Steve Milne to find out just how Molinare is shifting in this era of change.

Companies change and grow over the years, altering direction and adapting with the times. In some cases the name is all that remains, with what goes on under its umbrella bearing little relation to what the founders intended. Molinare has developed from its audio for radio and commercials roots in the 1970s to become a leading 'one-stop shop' in London's post-production market, with video editing, digital film transfer and processing, colour grading, and visual effects.

Despite this expansion in services and skills over the years, sound remains what director Steve Milne calls "the jewel in the crown" for Molinare. The facility has moved into film relatively recently, not just providing post-production facilities but also being part of getting British independent features made and financed; and while Molinare's extensive vision department is attracting work, Milne says audio expertise is as big a pull for producers.

Another Level

Over the last two to three years Molinare has been upgrading audio and video suites on a floor by floor basis in its two buildings on Foubert's Place, London. A floor of seven cutting rooms, called Planets, has been built to supplement the 14 edit suites on the Space floor. A new ADR room has been added, and most dubbing rooms refurbished. A new audio floor has also opened, housing three Foley-fit rooms, one Foley performance area, plus two stereo and three 5.1 mixing suites.

This was part of a £5 million programme, and Milne says another £5 million will be available from majority shareholder Century Communications Limited (CCL) to continue the process of upgrading and improving the facility. Molinare started out with more modest facilities but no less ambition in 1973, set up by Australians Stefan Sargent and Robert Parker as the first purpose-built commercial radio production facility in London, serving the then-new independent local radio stations Capital and LBC.

Base Beginnings

The first studios were in the basement of a building in Broadwick Street, which was rented from fashion photographer Michel Molinare, who had his studio above. As he was not supposed to be sub-letting the premises, Sargent and Parker took Molinare's name for the business, so as not to arouse the suspicion of the landlord.

In 1979 Molinare the company moved into Craven House, a former school, on Foubert's Place, which has been its main base ever since. The building opposite was later taken over, and in the modern round of improvements it will provide space for the visual effects departments of both Molinare and former Ealing Studios-based company Men from Mars, taken over by CCL last year and now moving into what was once Stefan Sargent's apartment. Molinare's old drive-in television studio, at one time the largest in central London, is now closed and will be converted into a digital grading theatre, which, Milne says, at nine metres wide will be an impressive addition to the London post scene.

During its long history Molinare has passed through the hands of several owners, including media group Television Corporation. The post-production market goes through regular bouts of tough times and in 2003 Molinare appeared to be struggling, with the distinct chance that an established name in the business would disappear.

TV Corps was clear that it wanted to concentrate on programme production, and in September 2003 sold

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Molinare in a management buy-out (MBO) headed by Steve Milne and Mark Foligno, who had been recruited as trouble-shooters in July to turn the business around. Both came from a manufacturer/business background, having worked together at the packaging giant Tetra Pak, although Foligno spent time at Sony promoting HD. This relative inexperience of running a large post house, says Milne, gave them a different approach to running the company and an entrepreneurial culture was established.

The Prize Of Constancy

While Molinare's video division has grown since the late 1970s, with online and offline editing leading into VFX, grading, and now digital intermediate (DI) for film, including scanning and printing, audio has been a constant. "We do combined picture and audio projects," says Milne, "but our menu allows the sound department to work as a stand-alone audio house."

From its radio days this audio facility within a larger operation has expanded into sound for picture, first for the television sector and now feature films, both supported by track-laying rooms and Foley/ADR theatres. During its darker days, getting on for ten years ago, Molinare brought in some star name dubbing mixers to bolster its sound operation and attract more work. Among those who arrived were documentary specialist George Foulgham, whose recent credits include 2009 Oscar winner *Man on Wire*, and Billy Mahoney, who moved from Magmasters with his entire track-laying team to established the drama audio department.

From that foundation the company has concentrated on bringing on talent from within. Among those who started out as either runners or juniors are Mahoney's sons, Aaron and Billy Junior. The audio team numbers 35, with 20 concentrating on drama. There is also the sound house within the sound house; in 2006 struggling documentary facility Fusion Post was taken over by Molinare and its D'Arblay Street premises houses two dubbing theatres and a track lay suite. Molinare D'Arblay Street is overseen by Steve Cookman, who mixed the first of Molinare's three Sundance award winning documentaries, *In the Shadow of the Moon*.

Over the years Molinare has rented out space to a number of other companies, production firms as might be expected, but also facilities, including Mill Film and Grand Central. The commercials sound specialist moved into its own facilities in Great Marlborough Street during 2006, giving Molinare the opportunity to revamp the old suites. "We had run out of audio capacity," explains Milne, "and Grand Central wanted to grow, so it was a situation that suited us both." Soundtracs DSoo digital consoles are among the desks used around Molinare, while the digital audio workstation of choice is Pro Tools, although the last incarnation of AudioFile is still found in some suites.

On the floor below the former Grand Central area Dubbing C and D are supported by two track laying rooms and all are used for what comes under the general heading of factual programming, including *Trawlermen* (Molinare has worked on series two to four of the gritty look at earning a living in harsh conditions) and cooking competition *Masterchef*, plus its variations.

These dubbing rooms have been refurbished, including a change in decor to bring the suites in line with the company-wide design policy. Milne calls 2009 'a big refurbishment year', with the areas surrounding C and D being a work in progress, with six new Avid Nitris suites due to running by the end of July.

A New Place

The ongoing development of the facilities is part of Milne and Foligno's plan to reposition the company. "Five years ago we were best known for post-producing Robot Wars," says Milne, harking back to a time when a show featuring mechanical gladiators controlled by geeks and electronics genii was a big TV ratings pull. Now Molinare is being marketed to attract "high end factual and TV drama", alongside what Milne describes as an "aggressive move into features".

Over the last four years Molinare has worked on 130 feature films and that trend is continuing this year, with recent productions including Edinburgh Film Festival award winner *Moon*, the directorial debut of Duncan Jones (who is probably haunted by the phrase 'son of David

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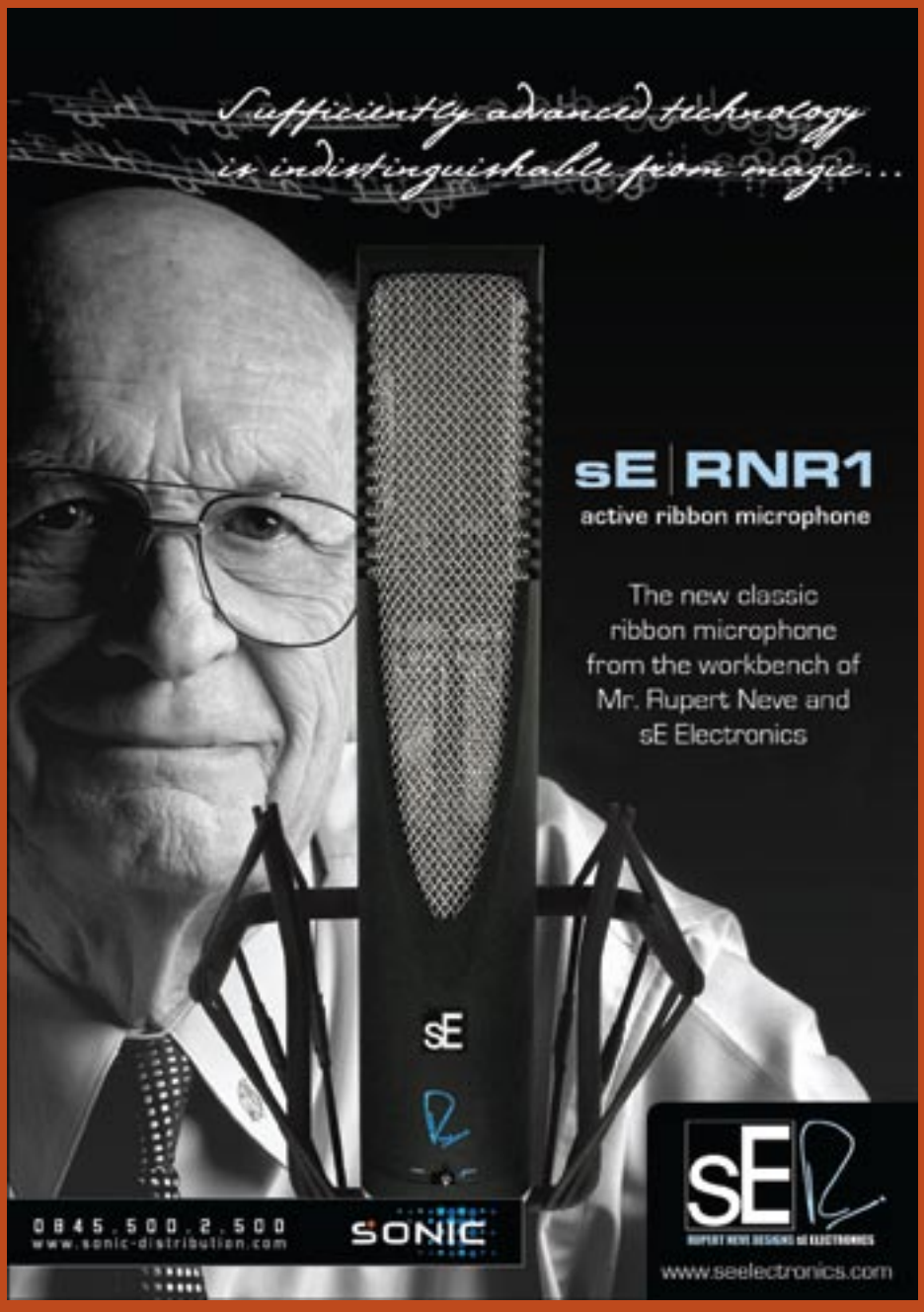
Bowie' and being named Zowie Bowie), which was mixed by Scott Jones, *Doghouse and Pelican Blood,* a love story set among those obsessive birdwatchers, twitchers.

Television continues to be the predominant medium for Molinare, with the ratio 75-25 between TV and film. Milne and Foligno achieved their ambition of moving away from lower end reality TV and avoiding commercials altogether. Milne says the company has benefited from the re-commissioning of a number of popular drama series - *Silent Witness* and *New Tricks* among them. There are also individual dramas and short episode runs, the hotly tipped productions for later this year being *Small Island*, adapted by Paula Milne from the novel by Andrea Levy, and ITV's revisiting of *The Prisoner*. The sound, including Foley, for *Small Island* was done at Molinare and production Ruby Films has confirmed that its next project, Chatroom, directed by Hideo 'The Ring' Nakata will be completely posted at the facility.

The new audio floor in Molinare's second building, across Foubert's Place from Craven House (currently promoted as 'The TV and Film Facilities Village') was previously an offline video editing area and now houses the three Foley fit rooms, the Foley stage and mixing area, three 5.1 rooms, and a track-lay suite.

Recent audio upgrades have included 14 Pro Tools HD systems bought from Digidesign reseller Scrub. Three of these have ICON D Command consoles, while ten LE packages are used variously for track laying and prep. Genelec DSP Series 5.1 monitoring systems were chosen for suites because of the integral self-calibrating capability, allowing the same parameters to be reproduced in different sized rooms.

The main theatrical re-recording rooms, Dubbing A and Dubbing F, based around Soundtracs D4s installed approximately two and a half years ago. The D4 was used to mix seven features that were screened at the Edinburgh Film Festival, including DJ Mark Tonderai's low-budget horror *Hush* and Gillian Anderson starrer *Boogie Woogie*, directed by Duncan Ward.



Questions, Anyone?

At one time the Molinare drama department was based firmly on audio projects but now the proportion of video work is beginning to increase, partly because of the amount of features being brought in. Billy Mahoney says the pictures being done in the same building, or even over the road, is positive. "The picture cutting rooms are based here and we can answer any questions the video people or producers have about the audio," he says. Mahoney mixed the sound on *Pelican Blood* and comments that this way of communicating was a great benefit to the production.

Molinare's infrastructure will be expanded later in the year with the instalaltion of a massive SAN system, with a new Xytech booking system due to go live in September. There is also an audio-only network for the sound effects library.

A New Point In History

A new phase in Molinare's history, and the opportunity to continue developing its facilities, came in May last year. Indian media entertainment group CCL, which owns Pixion – operator of post-production houses in Mumbai, Noida, and Chennai – bought a majority share in Molinare, taking a 76 percent stake, with the remainder held by Milne and Foligno.

Steve Milne calls the arrangement a "good fit" that will continue Molinare's growth into feature films. There is a circuit link to India, so work can be done there as well as in London, but Milne hopes to continue pulling projects into Soho, including audio from Bollywood."Molinare is now a substantial player again with the scale to deliver fast response and flexibility," he concludes. "Molinare is 36 years old and we are very proud to be custodians of the brand. We are about audio excellence and we must fight to maintain craft skills in what is a tough environment..."

INFORMATION

Molinare
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Ultrasone Pro 900

STROTHER BULLINS thinks that the PRO 900 could well be the cause of some fights in the future, they're just so darned desirable.

Perched atop Ultrasone's high-quality professional headphone line, the new PRO 900 closed-back headphone is a luxurious, comfortable, and well-made pair of studio-grade cans. Specifications include a 6Hz to 42kHz frequency range, 40mm Mylar/titanium driver, 40Ω impedance, 96dB maximum SPL, and a weight of 0.65lbs. The complete PRO 900 package includes a canvas-covered hardshell case with coiled and straight 10-foot cables terminated with Neutrik connectors, a quarter-inch to mini-jack adapter, spare ear cup pads, a 20-song reference audio CD compiled and largely recorded under the direction of Ultrasone, and a manual.

Featuring proprietary S-Logic Plus technology – which in part requires off-centre drivers angled towards the listener's outer ear – the PRO 900 has a unique sound for headphones that you may, or may not, be used to. However, it is my belief that the S-Logic technology greatly contributes to the PRO 900's impeccable imaging and fine detail necessary for engineers who use (or would like to use) phones for meticulous editing and monitoring.

Comparing Detail

In direct comparison with high-quality conventional studio monitors, I did hear detail in the PRO 900's performance that wasn't apparent in the monitors; for example, in listening to The Beatles' *I've Just Seen A Face*, I distinctly heard a harmony vocal, albeit short and mixed way back, with depth and detail that I had never even noticed before (and I've surely listened to the song several hundred times on dozens of sound sources). To my ears, the PRO 900 offers pronounced detail and acoustic presence at comparatively low levels; this quality will surely have you monitoring at lower-than-normal SPL, thus healthier listening habits over time – a notable and beneficial feature indeed.

"I distinctly heard a harmony vocal... with depth and detail that I had never even noticed before..."

On the PRO 900, pristinely produced vocal-oriented pop music – with reference material ranging from music by Beyonce to Big & Rich – was translated with notable 'air', well exposed reverb tails, and an overall 'depth of mix'.

At The Top

The PRO 900's street price is at the top of our industry's pro- or studio-specific headphone range. As such, you'll initially cringe when handing them to a musician in your studio (or at least I did). Luckily, the PRO 900 is a headphone built to take common studio abuse, such as ear-bleed-inducing tracking sessions while perched on the heads of rock drummers, guitarists, and vocalists. The PRO 900 is also physically fit: ready for studio wear and tear and, dare I say, built to be droppable. I've yet to use any set of 'phones that I consider worth buying for studio use that can't be dropped, yanked, or accidentally kicked across the floor again and again. In use as musician cans, the PRO 900 will seal well around most ears and heads; thus, you can give them plenty of juice and not suffer much from monitor bleed into your microphones. In my time with the PRO 900, every musician that used it had nothing but good things to say about its sound and feel, nearly to the point of disappointment if I didn't hand them the sole pair of PRO 900 cans I had during multi-musician tracking sessions.

In summation, I wholeheartedly recommend the PRO 900 to modern recordists and mixers who need a top quality set of pro headphones, and whose work generally ranges anywhere from dynamic classical, jazz, and lightweight pop to conservatively compressed rock music. The PRO 900 is an incredible musician's studio headphone, too. Just be prepared for a band fight if you're a tracking engineer with only one pair. AM

S-LOGIC PLUS

The basic Ultrasone S-Logic system doesn't, as the name might suggest, use any digital magic – the system is purely physical. The fundamental mechanic is a 'de-centralised' driver positioning that, according to Ultrasone, means signals are reflected off the surface of the outer ear before entering the ear canal – a process more akin to listening on monitors than headphones. The 'Plus' in S-Logic Plus adds new "precision dampening with micro-acoustic reinforcement", which optimises the relationship between driver, buffer-board, and spatial parameters. Lastly S-Logic Plus incorporates re-designed, finely-tuned ear-cups. That should be enough tech-talk to make even the most hardy pragmatist drool. Admitting you don't know what buffer-board is, is the first step to recovery.

THE REVIEWER

STROTHER BULLINS is Editor of *Pro Audio Review.*

Ultrasone Edition 8

Edition 8 headphones are serious pieces of workmanship and material excellence. The ear cups have a classy ruthenium precious metal coating, which gives them a mirrored finish. The headband and pads are covered in dark grey Ethiopian sheepskin leather – very soft and exceptionally comfortable. They have a new titanium plated tri-bass-tube driver, contributing to a frequency response quoted at 6Hz to 42kHz (yes… 6Hz), and they incorporate the Ultrasone S-Logic Plus technology (see the PRO 900 review opposite for more). Even the supplied storage bag is made from fine Madras goatskin, produced in France. No, I didn't just describe the latest in designer handbag opulence – I just described a pair of headphones.

To test the Edition 8s I sat down with several pairs of headphones and ploughed through some favourite recordings, including some raw DSD material.

The first thing to note is that the Edition 8s did sound the best. Not very descriptive, I grant you, but when it comes to, say, identifying particular strengths like bass reproduction, imaging, transient response, and so on, I got a little tied up. The fact is that the Edition 8s won on every aspect.

If you want the gory detail, I found a complete and stable centre, and convincing LR soundfield in some stereo classical recordings that I would never normally trust to headphones. In fact, this particular focus brought it home to me exactly why nobody should trust 'other' headphones in a critical stereo set-up. It was also these examples that proved it is possible to pick out instruments in an orchestral recording – if the recording is good enough. The less easily pin-pointed symptom of this was a correlated connection between the left and right channels that formed a whole image – not two speakers stuck in two ears.

A couple of good vocal tracks and a drum recording to die for also cleared up a few other points. First, the LF is as clean, as present, and as fast as can be. That is, the bass wash you normally get with less able headphones went away – replaced by the microphones that recorded the takes. To explain, one vocal hung out its dirty washing with some low-down plosives from a close-miked mouth that just didn't get through on the other headphones. This and a tight kick drum on another track was enough to show that Edition 8s succeed where so many others fail – they allow you to experience what it really sounds like to be the microphone. That's something that is normally only possible with a great studio monitor.

Tracking and auditioning stereo material on headphones is usually fraught with risk. Sometimes they can tell you everything is great, until you get back to base and the monitors tell you that you might need to have another go. I feel bound to say that I would trust the Ultrasone Edition 8s to both expose problems when it's wrong, and give you the thumbs up when it's right.

The question of whether anybody would pay over a GB£1,000 for any pair of headphones is another thing altogether. If you want reasonable, inexpensive headphones, then the high-end Ultrasone ranges don't fit the bill. If you want superb headphones that don't cost the earth, then the Ultrasone Pro series is ideal. If you want superb headphones that have something extra, then Edition 8 is your [goatskin] bag. They are the ultimate sound person's special present, or indulgence, or talking point, or demonstration of appreciation that extends beyond the purely functional. AM

THE REVIEWER

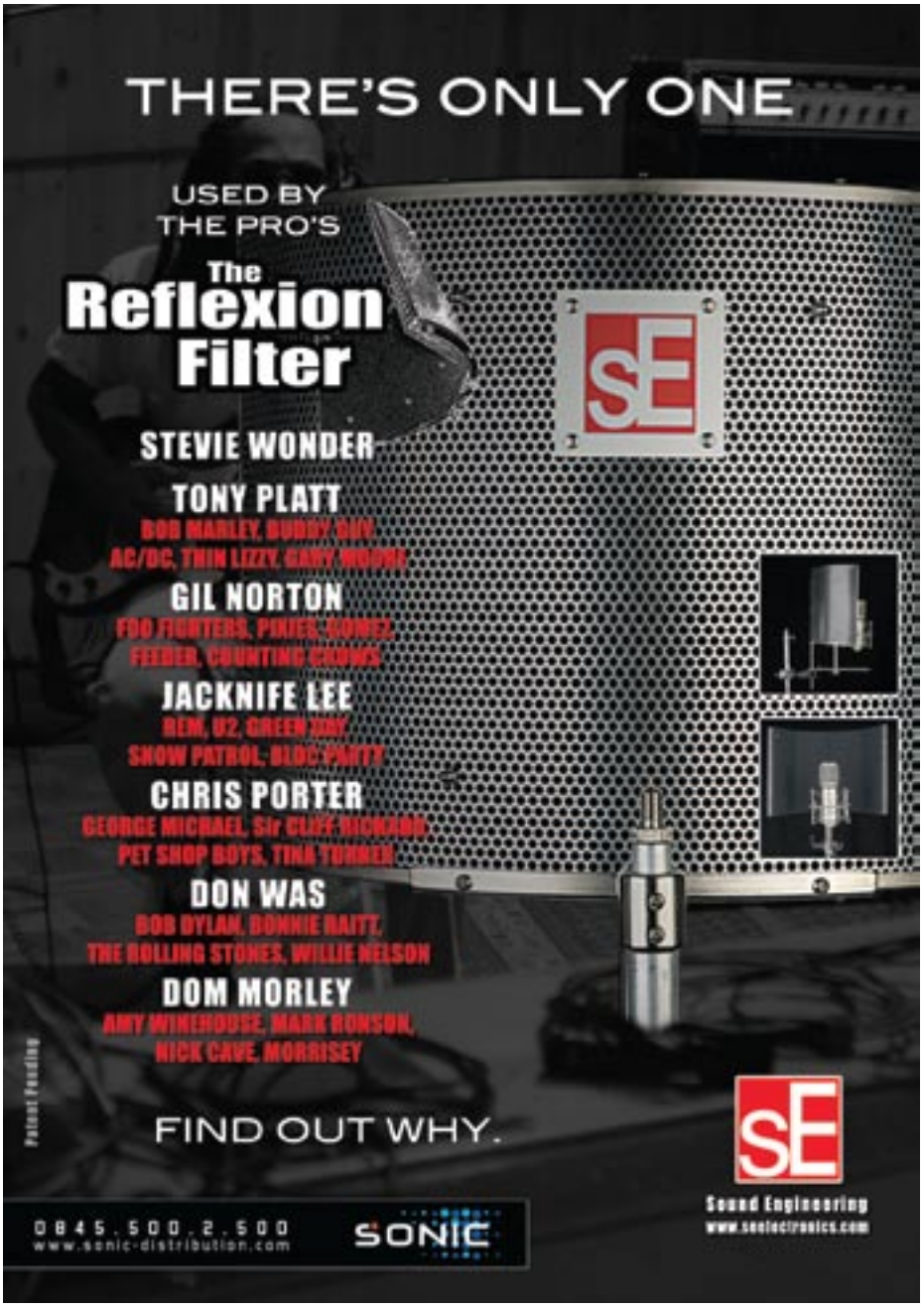
PAUL MAC is the Editor of *Audio Media* magazine.

INFORMATION

£ Pro900 – GB£323.00 (exc.VAT)
£ Edition 8 – GB£1,100.00 (exc.VAT)

Ⓐ Ultrasone AG, Bernrieder Str.17b, D-82327 Tutzing, Germany/Bavaria
Ⓣ +49 (0) 8158 9078 0
Ⓕ +49 (0) 8158 9078 50
Ⓦ www.ultrasone.com

Ⓐ UK Distributor: Audio Limited, Audio House, Progress Road, High Wycombe, Bucks, HP12 4JD
Ⓣ +44 (0) 1494 511711
Ⓕ +44 (0) 1494 539600
Ⓦ www.ultrasoneuk.com
Ⓔ info@audioltd.com



Plug-Ins & DAW Utilities

As CPU processing power continues to rocket upwards, so does the potential for innovation from software developers. The following demonstrate exciting new avenues for applications, as well as giving respectful nods to analogue inspirations.

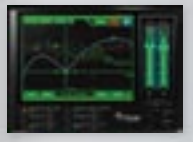
Abbey Road's Brilliance Pack features three plug-ins, RS127 Rack, RS127 Box, and the RS135, based on the original external EQ units the renowned Abbey Road Studios used to supplement its REDD console during the 60s. The emulations provide control of frequencies to improve the presence and definition of recordings while enabling instruments to stand out in a mix. The company claims that the original hardware was used on almost every Beatles album.

www.abbeyroadplugins.com

Celemony's hotly anticipated Melodyne Editor has at its core Direct Note Access technology (DNA), an extremely intelligent and potentially revolutionary piece of software. It allows editing of individual notes within polyphonic audio material by changing their pitches, key, and position. This has huge ramifications for both corrective and creative work. All of the monophonic capabilities from the original Melodyne are still on offer.

www.urlrequired.com

iZotope's 'complete mastering system' Ozone V4 provides users with, well, exactly that. The new version features a redesigned user interface plus a new Intelligent Loudness Maximizer, Perfect Reconstruction crossovers, mid/side processing for superior control over the sound stage, and a new True Envelope dynamics processing mode. The plug-in's total array of mastering tools comprises Loudness Maximizer, Paragraphic EQ, Multiband Dynamics, Multiband Stereo Imaging, Harmonic Exciter, Dithering, and Mastering Reverb.



www.izotope.com

The new Speakerphone 2 from **Audioease** boasts a whole host of new features, as well as newly sampled guitar amp cabinets, antique phones, toys, answering machines, and megaphones. Other standout introductions are a microphone simulation module that emulates models ranging from Royers to toy mics plus Coverup, a feature that replicates the effect of enclosed spaces on sounds.

www.audioease.com

Focusrite's Liquid Mix HD provides the same pool of classic EQ and compressor emulations as the Liquid Mix range, and offers up to 60 processing tools. These are comprised of 40 compressors and 20 EQs, all featuring a patented Dynamic Convolution process to deliver unique EQ and compression emulations. The plug-ins have been optimised for use within Pro Tools HD to provide over one hundred simultaneous mono instances on a standard HD3 system.

www.focusrite.com

Lawo has launched its way into the pure software domain with the release of a twelve-strong bundle designed to emulate the audio quality from its renowned mc2 series of mixing consoles. The full list of tools comprises automatic gain control, compressor, compressor with side chain filter, delay, expander, gate, gate with side chain filter, graphic equaliser, hyperpanning, image X, limiter, and parametric equaliser.

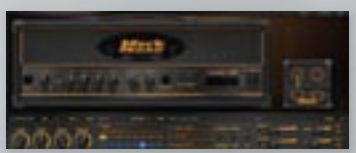
www.lawo.de

Brainworx's bx_dynEQ bundle comprises bx_dynEQ mono, bx_dynEQ stereo, bx_dynEQ M/S, and bx_boom, which all utilise M/S technology to create 'very mono-compatible stereo signals'. Notable features include one-band and two-band dynamic EQ, mono, multi-mono, and stereo (L/R and M/S), and a complete set of filter types for both main audio paths and signal chains. The company states that the bundle is not just an EQ or dynamic EQ, but a true dynamics processor and EQ system combined.

www.brainworx-music.de

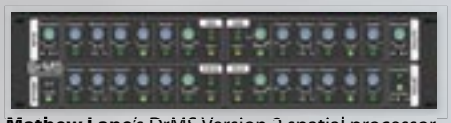
The multi-faceted Evolve virtual instrument from **Heavyocity** blurs the line between music and effects providing a raft of instruments and a vast array of samples to work with. Essentially, the software imbues users with the ability to manipulate and control a massive range of sounds to suit almost any atmospheric requirements, both musically and for use as effects. Heavyocity has also recently announced free expanded content available for download.

www.innovativemusic.com.au



The Mark Studio 1 amp modelling system from **Markbass** has been designed to recreate the sound of the company's renowned amplifiers in any hard disk recording application. The software provides the user with three Markbass amp models (TA501, R500, and Classic 300) and six Markbass cabinets, plus a choice of six microphones that can be used simultaneously to capture the woofer, tweeter, and/or port.

www.markbass.it



Mathew Lane's DrMS Version 2 spatial processor benefits from an improved sound engine and a completely new internal algorithm to allow the creation of wider and deeper soundstages. The excellent mono compatibility from previous versions is still present as well as extended MS processing that sees the stereo signal split into four sections instead of the usual two. Each of these sections features a resonant high pass filter, a tilt equaliser, and a sample-based delay line.

www.mathewlane.com

Sonnox's Oxford SuprEsser fuses a professional De-Esser with a Dynamic EQ to give "complete control over aggressive frequencies wherever they may be in the audio spectrum." Control over frequencies is enhanced by an intuitive FFT display, plus three listening modes, as well as full band compression triggering. Other notable features include Automatic Level Tracking, Linear Phase Filtering, and Wet/Dry blend control.

www.sonnoxplugins.com

The Tube-Tech CL 1B TDM from **TC Electronic** transfers the sound of the CL 1B compressor/limiter to Digidesign Pro Tools|HD, HD Accel and VENUE users. The tool supports a host of clever features that include: continuously variable ratio ranging from 2:1 to 10:1; advanced metering capable of displaying the input, output, and compressed signals for either the left, right, or both channels combined, and 30dB gain.

www.tcelectronic.com

McDSP has recently released its 'sonically superior' Live Pack for mixing live performances. The tools are optimised for use with the Digidesign Venue live sound system but also support TDM, RTAS, and AudioSuite formats for Pro Tools HD, LE, and M-Powered systems. The bundle includes Channel G Compact, Chrome Tone, DE555, FutzBox, MC2000, ML4000, and NF575, that all feature low-latency and the flexibility essential for live sound applications.

www.mcdsp.com

Source-Connect 3.1 from **Source Elements** was described by our reviewer as "a ridiculously nifty little tool", and it most certainly is. The tool enables audio connections between digital audio systems anywhere in the world, allowing direct-to-the-timeline recording with real-time, broadcast-quality audio using only T1, Cable, or DSL Internet connections. The software is available for most DAWs and there's also a stand-alone version available too.

www.sourceelements.com

The world-renowned SSL 4000 console has a proud place in the history of recording. **Universal Audio**'s UAD 4K Channel Strip emulates the console channel from this classic console providing transparent to 'in-your-face' VCA compression and rich EQ. The software features the Type E 'black knob' four-band EQ and filters, as well as a massive amount of other effects that includes fully parametric middle EQ bands.

www.uaudio.com

SurCode for Dolby E Encoder from **Minnetonka Audio Software** allows processing and management of file-based Dolby E assets and metadata in your DAW or computer. The plug-in provides encoding of up to eight channels of audio, with a variety of user selectable program types, ranging from 5.1 and stereo, to four independent stereo or eight mono channels.

www.minnetonkaaudio.com

TwinTube from **SPL** is part of its Analog Code plug-ins, and is modelled on the TwinTube processor from SPL's RackPack modular system. The tool offers harmonics and saturation effects typical of tube emulators providing 'warm, transparent, and smooth sound' to your DAW. Presence, clarity, and subtle to heavy harmonic distortion can be applied to improve vocals, acoustic guitars, drums, brass, and much more.

www.soundperformancelab.com

The ever-industrious **Waves** team has recently released the Grand Masters Collection that adds ten-new plug-ins to the previous Masters bundle, to complete a suite of thirteen mastering tools. The entire range comprises the Masters bundle (L2 Ultramaximizer, Linear Phase Equalizer, and Linear Phase Multiband Compressor) plus the new MaxxVolume, PuigTec EQP-1A, PuigTec MEQ-5, Waves Dorrough Meters, Stereo Edition, Waves Center, L3-16 Multimaximizer, L3 Ultramaximizer, L3 Multimaximizer, L3-LL Ultramaximizer, and L3-LL Multimaximizer.

www.waves.com

Neyrink also has a Dolby E compatible package in SoundCode for Dolby E, a stand-alone software package and Pro Tools plug-in for managing Dolby metadata and Dolby E encoding and decoding functions for multi-channel broadcast wave files (MBWF). Two modules comprise the software, the Broadcast Encoder and the Broadcast Monitor that, when combined, provide powerful tools for post-production studios, TV mixers, broadcast and content distribution organisations.

www.neyrinck.com

Pro-Convert from **SSL** is an audio project translation tool that facilitates the exchange of entire projects between different DAWs. Over 40 distinct audio applications are supported by the software, which uses Pro Tools 7.x to convert to and from disparate workstations. Features include simple step-by-step operation, 'audio tool' audio file format batch converter, frame accurate offset, fade curve translation control, plus pan and volume automation curve conversion.

www.solid-state-logic.com

Waves Audio recently released H-Comp and H-Delay from its Hybrid Line, so called for its philosophy of fusing the colour and character of classic analogue hardware with the features and flexibility of digital plug-ins. The H-Comp Hybrid Compressor features wet/dry mix option, analogue modelled release behaviour, and transient pass-through control, while the H-Delay Hybrid Delay offers slap-back echo, ping-pong delay, and tempo-sync with modulation amongst others.

www.waves.com

video guide

A Sound Pro's Guide To Video

Editing: Post Production Part 4

KEVIN HILTON looks at what the late 20th century brought to the craft of editing for audio post.

Montage

A real cinephile word, which is usually associated with either a specific style of editing by filmmakers from certain countries, notably Russia and France, or a sequence that compiles images from earlier in a film or of different views of the same scene. Montage comes from monter, the French for 'to assemble', 'hoisting', and 'setting up', and is used to describe several editing techniques. It can be applied to any edit but generally montage is seen as distinct from basic continuity cutting, although this is sometimes known as narrative montage. More arty forms are referred to as expressive montage, which has its roots in early 20th century Russian cinema. Even here there are two different styles: linkage, as laid down by the director and cinema theorist Vsevolod Pudovkin; and collision, developed by Sergei Eisenstein, whose work includes The Battleship Potemkin (1925) and October (1927). Pudovkin did not believe in images being obtrusive, so his brand of montage, as used in his film Mother (1926), is a sequence of related events that move forward the narrative. Eisenstein, on the other hand, juxtaposed unrelated, sometimes conflicting images to move the audience both emotionally and intellectually. This style is generally considered to be the true form of montage and Eisenstein is credited with inventing it.

Editing is a creative process, but it is also a physical one. From its earliest days a medium had to be cut, something removed, and then the free ends attached to each other to achieve the desired juxtaposition. In audio it was quarter-inch tape, in cinema and early television, it was film. This is an effective, highly tactile way of working, but it is destructive and going back if an edit does not work is a laborious job. And it was a linear procedure, so as much as editors valued the tactility, the thought of non-destructive, random access editing must have been very attractive, even if it seemed like a dream.

Non-linear editing (NLE) is now so well established and accepted that many of today's up and coming editors might boggle at the thought of actually cutting film, or magnetic tape, to make a splice. Linear video editing is non-destructive, but there is still the business of duplications if it's film, using a telecine machine, and then having to fast forward and rewind tapes to find the required sequences.

The Eddiflex off-line system of the early 1980s, designed by Engineer Adrian Ettlinger, was an attempt to give editors access to more footage at the same time, but it was not non-linear in the true sense of being able to call up a scene and have it ready for viewing almost instantaneously. There is the occasional misconception that non-linear audio editing (NLAE) came first – the thought being that early computers and disk storage systems could cope better with only non-picture signals – but the reality is that NLE for video (NLVE) did come first, much in the same way that recording images on relatively easy to handle celluloid pre-dated recording sound on malleable magnetic tape.

The late 1960s and early 1970s was a time of great innovation and development in the burgeoning computer industry. What was achieved back then was all the more remarkable considering the equipment available: huge processors running data tapes, all contained in big, temperature-controlled rooms. Compare that to desktop or laptop PCs that have more storage capacity and processing power, all for a couple of hundred pounds, and which can run professional video editing programs and the ingenuity of those behind the CMX600 can be properly appreciated.

Breakthrough For Sandcastles

Developed by Adrian Ettlinger and manufactured by CMX Systems, in a collaboration between CBS and Memorex, the CM600 appeared in 1971 and is recognised as the first genuine NLVE. With two control consoles that looked like old IBM computer terminals set into a sideboard, the Model 600 worked with disk pack drives that are generally described as being the size of washing machines. These contained removable stacks of eleven 29MB digital platters, with each platter giving five minutes of storage in half-resolution black and white pictures, along with audio and the forerunner of SMPTE timecode.

Of the 600's two monitors, the right hand screen displayed preview video, allowing the editor to manipulate the data/footage using a light pen, aided by a text menu. The left-hand screen showed the edited final result. Because the 600 worked with low-resolution video it was used only for offline editing. CMX produced an online version, the Model 200, which could auto-conform the edits performed on the 600; the two systems were sold together for $500,000.

The first use of the CMX600 was on a now little-seen American 1972 TV movie called *Sandcastles*, starring Jan-Michael Vincent, later to achieve cult fame in *Airwolf*. Sales slowed during the early to mid '70s, but new versions were developed and by the end of the decade, according to Bob Turner of Videography magazine, 90 percent of US broadcast videotape editing was done on CMX products. CBS sold CMX to Orrox in 1974 and it was later bought by Chyron, that discontinued the product in 1997.

The CMX system was described as a Random Access Video Editor (RAVE) and it is the random access (RA) element that makes NLE such a powerful concept. Following the lead of CMX, developers and manufacturers experimented with various ways of giving editors the ability to search for and use footage out of sequence from a number of sources.

The 1980s became the decade of experimentation in the search for a new form of picture editing and compositing. George Lucas has built his empire on technology, so there is no surprise that Lucasfilm worked on its own contender. EditDroid was introduced to the industry at the 1984 NAB Convention, along with the SoundDroid digital audio workstation.

RA-Wars

EditDroid used laser discs to store footage, with the required clips cued up using a computer scheduling database. Apparently there were sometimes problems and gaps if the sequences were far apart because the processor was not fast enough to always fire one clip after another. The workstation was connected to three monitor screens: one was the computer graphical user interface, another a small video screen for previewing material, while the third was a large, rear-projection unit to show the finished edit.

Only 24 systems were produced and there were doubts about overall efficiency. Nevertheless, the EditDroid did introduce features that are now common to all NLEs, including a timeline, along which the editor can select where to insert a sequence, and clips bins, where material is stored to be near at hand.

Other hybrid systems, using either Laserdisc or videotape, were tried out during the '80s, but the big leap towards digital, random access editing came in 1985 when Quantel introduced the Harry. This was a video effects compositing workstation, but it did offer some cutting capability. Its great strength, and possibly, with hindsight, its great weakness, was that the integral hard disk could record 80-seconds of material and then add effects.

Computer equipment was becoming smaller and more efficient, but processing power and recording capacity were still primitive by today's standards. In the case of Harry this was perhaps understandable as Quantel opted for uncompressed broadcast quality video, encoding footage ▸

Post Production: Part 4

in 8-bit CCIR 601 for storage on the hard disk. In 1989 the AES published a paper detailing how SSL's HarrySound could be integrated into the Harry workstation to create a combined audio-video post-production system (both companies were part of the Carlton group at the time and worked on joint projects). The concept didn't catch on at the time but has been revisited by both Avid and Apple in recent years.

Avid Interest

The real breakthrough came in 1989 with the release of two landmark systems, the Editing Machines Corp EMC2 and, shortly afterwards, the Avid Technologies Avid/1 Media Composer. The EMC2 has been overshadowed by its then-contemporary and slipped into the shadows of technology history. The system was based on a hard disk array, giving half-screen resolution with video running at 15 frames a second.

Avid was founded in 1987 by Bill Warner, who had tinkered around with electronics as a teenager. Warner attributes his shift from tinkerer to innovator to being given the Signetics 7400 Series Digital Logic Guidebook by a neighbour. Now running software development company Warner Research, back in the '80s Warner worked on methods of recording video footage on to computer drives in real time.

Avid would come to heavily influence post-production during the 1990s with its Media Composer range of NLE workstations but in 1989 the Avid/1 was a low quality – equivalent to VHS – system aimed at offline work. Based on a Mac II computer, something of an irony now as Apple is Avid's biggest NLE rival, the Avid/1 used Motion-JPEG (Joint Photographic Experts Group) compression to get more material on a drive, although it was only enough for short-form productions, including commercials.

Come NAB 1990 and the Avid/1 boasted new features, for a NLE workstation at least, such as digital dissolves, higher picture quality, greater storage capability, removable storage, support for PAL and upgraded audio editing.

As innovative as the Avid/1 was it was upstaged at that year's NAB by the NewTek Video Toaster, a processor card designed to work with the Commodore Amiga computer. The hardware and software combination included four VLSI custom chips and RAM, with early models working to all NTSC RS-170A standards and producing a full resolution colour output.

The cards slotted into the Amiga's single video expansion ports, rather than conventional busses, with four video inputs and two outputs. The system was priced at US$1,499, foreshadowing the computer desktop editing systems of today. The Video Toaster Flyer was an improved second-generation version, with more control capability and drive capacity, which made the Amiga an even more powerful NLE.

NewTek now markets the SpeedEDIT system as the fastest NLE available but back in the '90s the Video Toaster, despite its innovations, could not stem the tide of Avid. The next Video Guide will look at the development of the Media Composer, MPEG compression, and the NLVEs that have vied for market supremacy.

news

Guy Morley, a leading Editor at London post-production facility Concrete, has won the Film and TV Editors Association Award for Best Editing at the 17th Archipelago International Festival of Short Films for his work on *Another Thing*.

Written and directed by former actor Ilaria D'Elia, *Another Thing* was shot by Director of Photography Simon Minett on the Red One camera. The short, which plays with identity, time and atmosphere, was post-produced completely at Concrete, including grading, DI, visual effects, compositing, audio design and sound effects.

Morley performed the offline edit on an Avid Adrenaline and was praised by D'Elia for "skilfully putting it all together". The sound design was by Dino Sofos and Peter Woolliscroft, with HD grade by Victor Riva.

On the acquisition side of the production Simon Minett won the Winner's Kodak Award for Best Cinematography at the Archipelago International Festival. Editor Guy Morley commented, "The film works well with the Red One – it looks great and is also a great camera to use when working with tight budgetary constraints."

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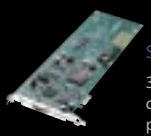

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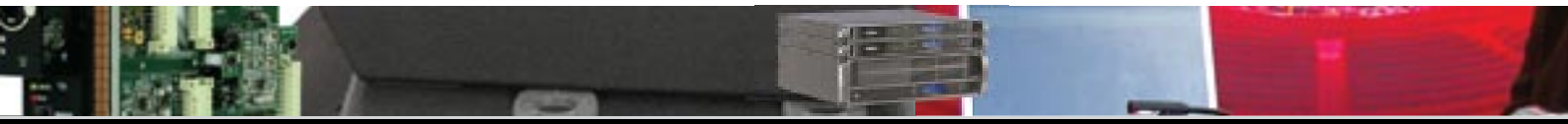


AMSR News – **56**
Technology, application, and installation news from the global sound reinforcement community.

Maximo Park at the Brixton Academy – **58**
The Indie band from Newcastle are opening for Glastonbury this year, and their UK tour saw sell-out performances in every venue. PAUL HOLMES met up with FOH veteran Huw Richards for an insight into the band's sound.

Allen & Heath iLive-T Series – **60**
ALISTAIR McGHEE gets proudly patriotic about the innovative new range of live digital mixing systems from the industrious British brand.

Audio-Technica M3 – **62**
Audio-Technica's new wireless monitoring kit sounds 'amazing', according to WILL JAMES. Check out what else the dynamic system has to offer.

Fostex Release LM16

Fostex has added to its live mixer range with the LM16, a 16/4/2 digital mixer featuring the same technology as the LR16 Live Recording mixer. The unit is designed to look and feel like a conventional analogue mixer, and also functions as the I/O Box and Controller Box.

www.fostexinternational.com

iLive Series Expanded

Allen & Heath has introduced two new modules to the iLive digital mixing series. RAB2 is a remote audio card enabling iLive digital mixing systems to work with a variety of common audio interface and networking standards. Additionally the new MADI 64 option card provides two 64-channel MADI links.

www.allen-heath.com

Meyer Unveil

Meyer Sound has a couple of new products out this month. First up is its new self-powered arrayable loudspeaker christened the JM-1P. The high-Q system offers a 20-degree horizontal by 60-degree vertical pattern designed to control coverage and minimise reverberation, and can be integrated in tightly-packed clusters for efficient horizontal dispersion. The speakers can also function as a point-source system in horizontal or vertical orientations. The JM-1Ps also benefit from Meyer Sound's patented REM ribbon emulation manifold technology, which results in low distortion and a tight pattern control. The cabinets are perfect for theatres, houses of worship, stadiums, and concert halls, and are ideal for centre or side-fill duties in touring sound applications. The frequency range runs from 55Hz to 18kHz with a maximum peak SPL of 136dB (at 1m).

Meyer has also released high-resolution measurement data for thirteen of its most popular loudspeakers in the GLL (Generic Loudspeaker Library) format, enabling users of EASE design and simulation software to model the interaction of Meyer Sound self-powered loudspeaker systems with the acoustics of rooms. The EASE software program was created by Acoustic Design Ahnert, and is developed and supported by the Ahnert Feistel Media Group of Berlin, Germany.

Dr Wolfgang Ahnert, Helen Meyer, and John Meyer.

Meyer Sound
+1 (510) 486 1166
www.meyersound.com

InfoComm 2009 Highlights

The hottest new releases from the massive audiovisual tradeshow

InfoComm 2009 took place in Orlando this June and saw the audiovisual industry and its admirers flock to Florida to see what was in store. EAW showed its new MicroWedge Series MicroSub, a fifteen-inch sub "designed to address the unique environment of onstage low frequency demands". The loudspeaker is mounted at a 45-degree angle, and the cabinet height is exactly half of the cabinet width when the MicroSub is laid flat to facilitate a variety of arrangement options. QSC showcased its Q-Sys audio processing infrastructure and control system. Designed in partnership with the team from Peak Audio, the Q-Sys provides digital audio signal routing and processing technology, combined with complete system monitoring and control. Crown introduced its latest update for the Macro-Tech i series of amplifiers (MA-5000i, MA-9000i, and MA-12000i). Riedel Communications introduced the new RockNet 100, a cost-effective, high-quality three-in-one audio interface bundled with an expansion card for Yamaha digital mixing consoles. Digigram unveiled AQONDA, a remotely-controllable EtherSound stagebox capable of transforming up to sixteen analogue audio signals into as many EtherSound channels, and injecting them into an EtherSound network.

InfoComm Show
+1 800 659 7469
www.infocommshow.org

New Kobra System Sounds Like A Million Dollars

K-Array has decked out part of the set for Italian big-money game show, *Milionario*, an adapted version of the British show *Who Wants to be a Millionaire*. Expertly hidden speakers were required to provide the performance of a large PA system while remaining inconspicuous. The Kobra KK50 system was used due to its compact size, impressive output, and wide dispersion. The 3D-Array Element system also boasts vertical, horizontal, and 3D-array configuration, multiple two-inch long excursion full-range drivers, a smooth frequency response, and a 114dB output from a cabinet just 50cm wide. The 'super slim' line-array system also delivers almost no phase problems thanks to its compact stature. Backstage PA were responsible for the install at the set of the popular Italian TV show, which is produced by entertainment giants Endemol (*Big Brother, Charlie Brooker's Screenwipe, Deal Or No Deal*).

K-Array System
www.k-array.com
+39 0558 487 222

Butterworth The Wait

Warwick Conferences has re-opened its flagship 1,200-seat music and conference venue, Butterworth Hall, after investing £6.9 million in a major 10-month refurbishment project. Devised by Architects Design Partnership LLP, the auditorium and concert hall features a new main entrance, enhanced sightlines for seated guests, and improved acoustics courtesy of arts specialists and acoustic experts Acoustic Dimensions.
www.warwickartscentre.co.uk

Soundcraft Scoops ABTT Award

Soundcraft's Si2 digital mixing console was awarded 'Best New Sound Product' at the ABTT Annual Awards. ABTT Chairman, Mark White, commented, "The Si2 was commended for its easy and intuitive layout, making the transition from analogue to digital very simple." The Si2 offers the same operating platform as the Si3 in a smaller footprint, ideal for space conscious theatres.
www.soundcraft.com

Treat Your Headphones Well

Michael Klvana, Sound Engineer for the Crosby, Stills & Nash City Summer tour will be using Ultrasone's PRO 550 and PRO 900 headphones for referencing. Paul Taylor, President of Ultrasone commented, "Michael Klvana is one the industry's predominant sound engineers, having him choose Ultrasone headphones for this project only speaks to the fact that we design some of the world's most sonically accurate headphones."
www.ultrasone.com

Maxïmo Park Live

Indie-Punk @ The Brixton Academy

Packed British venues have recently been heaving to the sound of Maxïmo Park's sell-out UK tour. PAUL HOLMES checked in with FOH Engineer Huw Richards to learn about mixing for the band's punk-primed performances.

Huw Richards, FOH Engineer for Maxïmo Park's sell-out UK tour, has worked with some of the biggest names in the music business. The list embraces Muse, Placebo, Linkin Park, My Chemical Romance, Fun Lovin' Criminals, Billy Ocean, and a long spell with Oasis during their early heydays. Maxïmo Park's tour sees the Newcastle-based band playing in a total of eleven venues around the UK. I caught up with Richards and System Tech Nick Pain at the penultimate gig of the tour in London's Brixton Academy.

A Big Name Venue

Brixton Academy is one of the most revered gig destinations in the UK, with an inclined floor providing excellent views and a subconscious pull towards the Art Deco-framed main stage. It's been voted Venue of the Year twelve times since 1994 by NME magazine, and has seen just about every big-name band across the globe play to its 4,700-strong capacity. It's also stuck right in the middle of a thriving hot-spot for party-goers and live music enthusiasts, attracting a dynamic, eager, knowledgeable crowd. Maxïmo Park and their entourage were no exception to the rule and, with only a night in Bristol to go before their European and festival tour kicked off in earnest, the night promised to be a good one.

Making things go as smoothly as possible was System Tech Pain, responsible for the main routing and setting up of the equipment, allowing Richards to focus on a craft he's been honing since he was sixteen years old. With a family history entrenched in classical music (his father was a violinist and mother an opera singer, his auntie a concert pianist, cousin a conductor, and many other relatives composers) it seemed inevitable that Richards would follow a similar path. At the age of sixteen, a sound engineer approached his father and mentioned he wanted someone with no knowledge, a fresh canvas if you like, to train up and become part of his team. His father knew just the man. Having recently left school, Richards fitted the bill perfectly and he's been out on the road ever since. He remembers his years with Oasis as some of his fondest memories from a career spanning almost three decades, and has worked with Pain for the last eight.

Richards confesses that Pain, "looks after me, makes sure the system's correct. He's so fast at it, it would just take me ages." This allows him to focus on getting the sound of the band right and adapting it to the different spaces a tour takes in. The tour uses a Vi6 console for monitoring duties, with Camco amps and SSE MB4 wedges on front-fill duties and no side-fill. For FOH, Richards chose a Midas Pro6 after a successful spell using its bigger brother the XL8. The rest is simple, Pain assured me. The band only needed around 30 channels on top of ambient mics so cabling to the respective consoles was relatively easy.

An SSE line system was passively split between the ▸

► digital crates for the Pro6 and Vi6. A pair of Cat5 cables ran to the FOH position where Richards and Pain were able to look after things. A Cat5 cable also ran from FOH to the LA8 amps where Pain could control the levels of the L-Acoustic KUDO system too (see box out).

A Shure Thing

Richards is using Shure drum mics on the kit, apart from the toms and overheads, which are Sennheiser 604s and AKG 414s respectively. The 414s are also being used on guitar cabinets and a Sennheiser captures vocals. The gigs are being recorded using Klark Teknik's DN 9696, giving the bands the opportunity to multi-track their performances. The only other outboard equipment being utilised is a TC Electronic M-5000 digital audio mainframe with 480-esque reverb plate settings. Everything else is onboard the Pro6, which is just how Richards prefers it.

Richards is a long time Midas user and recently had his first outing with the company's premier digital console, the XL8. He was in charge of a 96-input orchestra (the Birmingham Symphony Orchestra to be precise) and two very famous Indian opera singers. With no rehearsal time, and no music to reference with, the task of mixing a challenging three-hour show was a daunting one. However, he sailed through and the confidence gained from adapting so swiftly to the XL8 endeared him to obtaining a Pro6 for the tour. On the Indian extravaganza he said, "we had a great result and that was a great show, so I've always had a passion for the feel and sound of the desk since then. I knew the Pro6 would be exactly the same. Everything we ever asked for was in the XL4. And I think everybody's been waiting for that in the digital domain, and it is with this desk."

The size of the desk is one of the key reasons for Richard's and Pain's praise, providing the perfect solution to Maxïmo Park's and their support band's I/O requirements. Furthermore, the fact that Richards is only relying on one piece of outboard gear is testament to the console's onboard effects and inherent sound quality. Richards commented. "It sounds wonderful. I have tried to drive it to the point where it'll distort. Well, I don't think we could get near it with the system we've got." And on the four compressors per channel he noted, "The sweet spot with those is, you can just feel it. It's just there. It's just fabulous. I'm having great fun with those." Other favourites include the fast track buttons that allow one-touch access to instruments, effects, compressors, EQs, almost anything on the board in fact, negating the need to look through layers to find parameters. The console offers all the advantages expected from a digital platform but it is its resemblance to an analogue board that Richards prizes. "I don't treat this as a surface," he said. "I treat that panel as a mixing desk, that's how it feels to me." This means he can be hands-on with the mixing, an approach he favours over having pre-prepared scenes ready to load up. "Musicians can change from night to night. You don't know how much level you're going to get sometimes, so I'd just rather have it in my fingers."

> "Everything we ever asked for was in the XL4. And I think everybody's been waiting for that in the digital domain, and it is with this desk."

PA PROFILE – L-ACOUSTIC KUDO

Performing PA duties is L-Acoustic's KUDO line source system, providing flexible mounting solutions to accommodate the wide range of environments encountered on tour. Six ground-stacked KUDO cabinets per side were used for the smaller venues, soaring up to thirteen flown either side for the larger gigs like Brixton. Packing extra punch were eight SP28 subwoofers, three dv-DOSC cabinets for extra sparkle, and four ARCS for infill, all powered by nine LA8 amplifiers in three LA-RAKS. Garnering praise was the KUDO's LOUVER technology that provides four directional options via adjustment of the horizontal horn (50 degrees, asymmetric 80 degrees, and 110 degrees). On the hang in Brixton, Pain explained, "in a venue like this, the last thing you want is a big wide box splashing the walls. You're not delimited to having just one louver setting. You can create a hang that goes 50 out to 110 at the bottom. In this hang the top eleven boxes are all 80 and then the bottom two boxes are 110, which means I've sacrificed clipping that wall slightly for the fact that I'm covering right down into the barrier." Richards added, "that's another big plus because when you ground-stack a system in a lot of the smaller venues you're almost up against a damn wall, which is wasted energy and it reflects back in the room causing more problems than you need." A real surprise for both engineers was a power output that would make Bono proud. Pain commented, "we haven't been drawing more than probably 25 amps per leg on three phase, which is incredibly small for the amount of noise coming out."

Appreciation For The Strip

Another useful feature appreciated by both Richards and Pain is the 'Area B' strip, four faders that can bring in channels or parameters to be controlled separately from the main operator. Pain explains. "If Huw's got a problem with a channel he can clip me round the back of the head and go 'Oi, fix that', and I can be listening on another pair of headphones dealing with whatever I need to deal with. Anything I need to do is completely segregated from Huw and I don't have to be leaning over him getting in his way, which is great."

The efficiency of their set-up has meant that most venues have been a doddle to set up in, with the only major snag coming at the Manchester leg of the tour. Power problems forced the venue to hire in a generator that didn't arrive until 6.15pm, an hour and a quarter before the gig started. "We had three bands to sound check and I've not been there since they've raised the roof," explained Richards. "So there were some strange standing waves going on. It was a bit unruly. But we got it sorted for the show and it wasn't a problem."

There were no such issues at the Brixton gig, which was buzzing with fans ready to hear a band whose rapidly ascending profile sees them opening at Glastonbury this year. The sound, as expected, was nothing short of superb, and with a very active Richards presiding over the desk, Pain was left to divide his time between 'Area B,' monitoring the DM9696 and beer patrol duties. With the festival season now in full swing, it's obvious that as a team, the band and engineers will be having a very successful summer.

DIGITAL MIXING SYSTEM

Allen + Heath iLive-T Series

Allen + Heath's new T-Series is a well-equipped digital mixing system that while affordable, is anything but cheap. ALISTAIR MCGHEE adds up the true value of worth.

When the Apostle Paul arrived in Athens he found a group of people who were consumed by the 'new', they spent all day discussing the latest fads and fashions to arrive at the centre of ancient intellectual life. I like to think that the ancestors of the audio industry were represented there in some small measure, for the truth is that we all love the latest thing. Partly this is because we have drunk deeply of the mathematics of fashion where new = good, and old = bad. But more worthily because too often we have seen great British products gradually wither, date, and eventually fossilise, dying through lack of continued product development.

That is why I was very pleased to get an invite from Allen + Heath to look at the latest incarnation of its iLive series – iLive-T. Eighteen months ago I had been very impressed by A+H's take on the live sound mixing model built on its DSP core, a really tidy surface, and Ethersound audio distribution. The new iLive-T makes the Allen + Heath package more affordable by remodelling the hardware and substituting the in-house ACE protocol for the externally licensed Ethersound technology.

Lions And Monkeys

The basic principle remains the same – your stage box is where the DSP action is, alongside the lion's share of the I/O. There are two new iLive-T stage boxes (or mix racks) with 32 and 48 inputs respectively. To keep the price down, the T series racks offer a fixed I/O format against the modular flexibility of the iLive classic. The T series control surface retains all the functionality of its iLive sibling (well the screen doesn't tilt), but is done to a lower price point. If you compare the build of the T series with competing products from Yamaha and Roland, you certainly won't be left thinking it is 'cheap'. If you employ monkeys to hit your mixing desks with hammers, then the road warrior iLive will be more your cup of tea – or you could just stop that and save yourself some money.

There's no doubt that the Ethersound technology in the original iLive provides some great features. It's a flexible audio network that allows interfacing to a range of kit from a variety of manufacturers. It allows sophisticated topologies and a set of scalable solutions. So why change? Well the bumblebee in the Ethersound ointment is the price of the license, and that has meant that the technology has remained relatively thinly spread among higher end products. The success of Roland's REAC digital snake demonstrates that a simpler point-to-point transfer system is what many people are looking for, and ACE is aimed at delivering the iLive experience to that market without the expense of Ethersound. ACE carries audio and control data from rack to desk and back, and with the right card can offer 'auto switching redundant link', sweet.

A Serious Business

Before we come to the detail it's worth saying something about Allen + Heath's approach to desk design and the serious business of sound. Having come from a hi-fi background, I'm sometimes mystified by the scorn heaped on the hi-fi industry by some in the pro audio world. Yes, hi-fi has more than its fair share of snake oil, charlatans, and mumbo jumbo, but there's plenty of high quality sound engineering going on and plenty of genuine passion for high quality sound. I recently read an excellent article on power supply design and its influence on the sound of mixing desks. Very informative stuff, and while certainly not reflecting new concerns in the world of pro audio, still a refreshing piece of work. But many hi-fi amplifier designers (like Naim Audio for instance) have been differentiating their range essentially on the basis of power supply design (and the results in terms of better sound) for 30 years or more. Proper engineers in both fields have legitimate contributions to make.

What is true is that repeatable listening tests are time consuming and require dedication and expense to get right. In one sense there is nothing more nebulous than a manufacturer's claim to 'great sound', but on the other hand it's actually easier to sell your kit on features that can be demonstrated with the push of a button or by simple numerical methods. More inputs, or more bits, or more pieces. And of course these can be pushed in a ▸

THE REVIEWER

ALISTAIR McGHEE began audio life in Hi-Fi before joining the BBC as an audio engineer. After ten years in radio and TV, he moved to production. When BBC Choice started, he pioneered personal digital production in television. Alistair is now Assistant Editor, BBC Radio Wales, but is allowed out occasionally.

brochure or a webpage and appeal to the heart of every engineer who loves making comparison spread sheets. And that's all of us.

I was impressed with the listening regime at Allen + Heath. It takes very seriously the notion that its desk is not a straight wire with gain, unless you can insert it in circuit and not detect its presence. Feed your console with a high quality source and listen to it with some high quality amplification and speakers. Doesn't everybody do that? Well, it's interesting that there have been industry standard products renowned for their flexibility, features, and crap sound, to the point where whole product niches have grown up to circumvent the crap sound of product X. Sounds like the world of hi-fi to me. So the answer is 'no', everyone doesn't do that, or if they do, not everyone takes the results seriously enough.

If you buy an iLive-T then you can be assured that the R&D team has spent hours examining the sonic performance of the desk in an effort to ensure that the audio path is as neutral as they can make it, and that the effects and EQ are of as of high a quality as they can manage. Which is just to say that the sound is a vital component of the engineering, as of course it should be.

In Big Bro's Footsteps

The other strengths of ILive-T are visibly inherited from its big brother. I love LCD labels for channel names and configurable colours. Couple this to complete layout flexibility (true stereo channels – hooray) and you can layout and personalise the mixer to suit. On the 112 surface, you get a whole channel strip worth of assignable controls. That includes preamp, gate, EQ, compressor, and the limiter/de-esser. On this surface no more menu muddle, as you reach for a control and realise that adjustment is in software. The big surface has 24 faders controlling four layers. Mate it to the iDR 48 and you get 48 inputs on stage, and 16 line inputs on the console itself. A starter system with the 20 fader '80 surface' has 32 mics at the stage box, and eight local line inputs. Or leave the surface at home and control the rack with your laptop, your wireless laptop from the best seats in the house or that tricky spot at the back of the balcony. Both mix racks offer an option slot for another ACE card providing digital splits of the inputs to a recorder or second mix position.

The surface abounds with 'nice to haves' – the mix button gives instant access to the destinations of an input or the channels contributing to an output. Hardware copy and paste buttons make cloning details quick and painless. Once you've got past the simple joy of set up, store, and recall, you quickly realise that user management is a big deal. Mark doesn't want me writing all over his set up and I certainly don't want Gwynfor messing with mine. The iLive-T Show library system is comprehensive enough to handle everything from a simple routing set up to a world tour.

As the T series talks to the A+H PL series of controllers, you add inexpensive control elements to your set up and configure them how you like. So you can let the talent mix their own foldback on a PL 10 series rotary panel. Give them one each or programme one panel to control all the stage mixes.

A Game Well Played

We're so used to the idea from the Far East of the flagship followed by the version for the rest of us, it's just a little surprising to see a British manufacturer playing this game so well. Allen + Heath now has a range of digital solutions from its iDR install series, through to the iLive-T that can be joined in subtle and sophisticated ways. ACE is surely the right move, and Ethersound is still available on the original iLive series if that is what you need. The truth about digital assignable desks is that once you've sorted out your I/O the devil is in the detail, and detail is what the T series does so very well. I recommend you get down to a dealer and have a go on an iLive-T – because you're worth it.

INFORMATION

£ iLive-T80 – GB£6,199.92
iDR-32 – GB£3,409.92
iLive-T112– GB£7,749.92
iDR-48 – GB£4,184.00

Ⓐ Allen + Heath Ltd.
Kernick Industrial Estate, Penryn,
Cornwall,TR10 9LU, UK
Ⓣ +44 (0) 1326 372070
Ⓕ +44 (0) 1326 377097
Ⓦ www.allen-heath.com/uk

AUDIO-TECHNICA M3

Wireless In-Ear Monitoring System

A-T debuts its road-worthy wireless monitoring kit, and it sounds "amazing", says WILL JAMES.

Audio-Technica has been the purveyor of many fine microphones for three decades. A-T now presents a foray into the in-ear monitor realm with a new wireless rig called the M3.

Features

The M3 comes in a well conceived package with the wireless receiver/belt-pack, the transmitter, power supply, in-ear dynamic headphones (EP3 ear buds), and several ear bud accessories like extra rubber ear cups and a short ear bud cable extension for use with portable audio players [The locking 3.5mm connector won't work with a standard 3.5mm jack. – Ed.] The M3 transmitter is 1U tall and a half-rack space wide; optional rack mount ears are included. The transmitter is connected to the console by means of separate left and right XLR/TRS combo connectors; also included is a L/R XLR throughput connection. The M3 front panel is simple. Its headphone output jack is flanked by a headphone volume rotary control. The channel/frequency controls are accessed through a series of menu button pushes, and the accompanying Up and Down-arrow controls. The frequency display LCD screen is the centermost component of the transmitter.

The M3's receiver is a conventionally sized belt-pack, about the size of a pack of cigarettes. The receiver case is plastic and contains space for 2x 1.5V AA batteries, centered display, and frequency controls. You can attach an external lavalier style microphone, allowing for personal control of ambient sounds – more on that later in the review. The top surface contains L/R pan control, which is concentric to the volume control.

In Use

The M3 kit arrived just in time for me to employ it at a Daryl Worley concert, where our company was providing audio, lighting, and stage production. The show's monitor complement was a mixture of in-ear monitors for a few players and conventional wedges for the other players. I sent signal to the A-T in-ears by means of wiring the transmitter to an unused output of our Midas Sienna monitor console. I did insert an equaliser on the insert point of the master output of the chosen mix, much the same as you would for any wedge monitor or speaker for any monitor mix. Even ear buds sometimes require a little EQ to give them a nice edge. I built my own mix to send to the transmitter, and I did so by using the supplied EP3 ear buds as the reference speaker, as opposed to a cue wedge. My first impression of the EP3 buds was 'amazing'. They were comfortable, even with the supplied generic rubber cups; equally important, they sounded superb. The bass response was excellent, which is fairly unusual for ear buds. The midrange frequencies were crystal clear and the highs were sizzling but never splashy. I first inserted the outboard EQ and then bypassed it, repeating this process several times, ultimately deciding to leave the EQ out of the signal path, as the EP3 ear buds sounded incredibly good without the EQ.

A great feature of the M3 kit is that it allows you to attach an optional lavalier microphone to the belt pack receiver and clip it wherever you want; it gives the user the option of how to mix the ambient audience and stage volume to interlace that mix with your monitor mix. The side of the receiver has an 1/8th-inch jack, and when optioned to do so, it allows you to send the ambient to the right side of the pan control and the actual monitor mix to the left pan, thus giving you the ability to balance the two sources at your own discretion. I actually found this feature to be useful, because once the monitor engineer has installed the ear buds in his ears perfectly, it never fails that someone suddenly has two hundred questions for him. I have always used a separate mic at the console with PFL on for that mic's channel; if others wish to talk to you, they can do so through the mic; the M3's A-T lavalier mic attachment eliminates that need. However, it's worth considering the downside of doing this: the lavalier mic picks up a fair amount of other ambient sounds during soundcheck, such as stage volume and backfire from the mains. [A-T notes that the receiver does have an external mute for its ambient mic.] The belt-pack receiver can also scan the available frequencies, permitting you to easily link to a spare M3 transmitter in that frequency group. The well-written M3 manual gives the complete frequency chart for Audio-Technica IEM systems, allowing for a little advance info in rental applications.

Audio-Technica also supplied a model M2 in-ear rig, which has the same buds, the same receiver, but doesn't have the backlit displays or the scanning capability of the M3 receiver. It's also a quality product and slightly less in price.

Summary

Audio-Technica has a winner with the M3. I found it to be a high-quality product that is very roadworthy with excellent features. I used the product on four of our own shows, and each time I was treated to a very pleasant listening experience. I recommend this product whether you are a musician or a monitor engineer. AM

INFORMATION

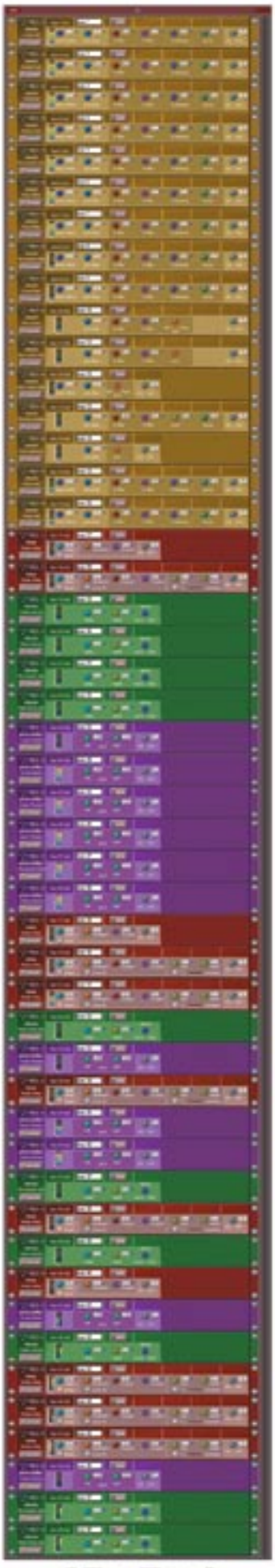
£ GB£769.00 (inc.VAT)

Ⓐ Audio-Technica Limited (UK), Technica House, Royal London Industrial Estate, Old Lane, Leeds
Ⓣ +44 (0) 113 277 1441
Ⓕ +44 (0) 113 270 4836
Ⓦ www.audio-technica.com
Ⓔ sales@audio-technica.co.uk

THE REVIEWER

WIL JAMES, Owner and Chief Engineer of Atlantis Audio and Lighting, is a longstanding contributor to *Pro Audio Review*. www.atlantisaudio.com

DiGiCo Flying High above the Competition


48 stereo on-board FX made up of
32 stereo floating point Tiger Sharc time based FX & 16 stereo FPGA powered floating point Reverbs
48u Rack

Effects – the world's first 16 x floating point stereo Super FPGA Stealth digital reverbs. But the power does not stop there. Utilising the capabilities of SD7's Tiger SHARCs, there are now also 32 x floating point stereo effects, including delays, choruses, pitch shifters, etc. This gives an astounding 48 simultaneous stereo effects housed within the console. Even with today's more compact outboard packages, this saves the equivalent of 48U, or 2.13 metres, of rack space and also alleviates the need for 96 inputs and 96 outputs for patching of effects. In fact, the returns alone would fill the entire channel count of many other digital mixing consoles.

DiGiTUBE - another world's first, Super FPGA preamp tube emulation, with full drive and bias control. Available on all 256 processing paths, including channels, auxes, groups or matrix with usage monitored via the DiGi-TuBe icon on the console's screen when activated. A delay usage meter is also now shown on the meter bridge when this function is used.

Dynamic EQ – now available on all 256 processing paths and on all four EQ bands, effectively adding 1024 frequency driven dynamics to the console. These are individually switchable and can be easily monitored via the gain reduction/expansion meter.

With regards to the desk's dynamic EQ, "I've always used a BSS DPR901 equalizer with Brandon's vocals as he loves to cup the mic for that harsh sound. But when that's amplified out front, it can get a little out of control sometimes, so I use them to help compress set frequencies to try and smooth his voice out. Having that built into the console, and having it sound even better than a 901… Well, there's not much else I can say." James Gebrhard (The Killers FOH Engineer)

Multi Band Compressor – again available on all 256 paths, adding an extra two compressors per path giving a further 512 dynamics to the console.

Talk-to-buss with dim function – designed with the monitor engineer in mind, this is a dedicated talkback channel that can be routed to any aux buss, allowing direct communication to any wedge or in ear mix. When activated, this function also has the ability to instantly dim the audio to a particular mix by the desired amount required by the engineer or artist.

SD7 MACH2

and more...

MACH2 is part of DiGiCo's ongoing commitment to its ever-increasing customer base and ensures its product is always at the cutting-edge of technology for sonic quality, features and facilities.

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Welcome to *Microphones 2009*, an International Buyer's Guide. We've scoured the ever-widening market of professional microphone products for your convenience, and thrown in a few informative and hopefully thought provoking articles from experts in the field.

Now updated and refreshed, this guide is a collection of promotional articles looking at 11 of the world's leading microphone manufacturers and their product ranges. Inside you'll find the stories behind the gear – the ethos' and design ethics that go into producing one of the core components in professional audio – and details of the products themselves. In addition, we've collated a massive directory of mic manufacturers, and commissioned three articles around the subject of microphone technology and technique for the audio pro.

Whatever your field of work, the quality of your product depends heavily on the quality and method of acquisition. This is why microphones are so important, and why this genre of audio gear probably generates more passion than any other. While the range of basic principals in microphone technology is relatively small, the variations on these themes are incredibly numerous – we've listed over 80 manufacturers in our directory, from all over the world, most offering choice across several transducer or electronic approaches.

You might be a film or drama location recordist, a music studio engineer, a Foley editor, a radio journalist, a member of an ENG crew, a live sound engineer – any, in fact, of the hundreds of very specialised roles that require not only a theoretical grounding in microphone technology, but also intimate knowledge of the 'art' of microphone practise, placement, and choice. You might even just be starting to build your microphone stock and need a place to start. Are you aware of recent advances in all areas of microphone technology? Are you familiar with a handful of high-profile manufacturers, but would like a greater breadth of awareness when it comes to the 'alternatives'? Whatever your needs, *Microphones 2009* should be able to help. It should be a place to begin your search.

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The NewBay Team.

AUDIO MEDIA www.audiomedia.com
(UK) Tel: +44 (0)1480 461555 - Fax: +44 (0)1480 461550

Publisher/Sales
Nick Humbert
n.humbert@audiomedia.com

Editorial Manager (Europe)
Lanna Marshall
l.marshall@audiomedia.com

Editor In Chief
Paul Mac
p.mac@audiomedia.com

Design & Production Manager
John-Paul Shirreffs
jp.shirreffs@audiomedia.com

Radio World International www.rwonline.com
(Milan) Tel: + 39 02 7030 0310 - Fax: + 39 02 7030 0211

Publisher/Sales
Raffaella Calabrese
rcalabrese@broadcast.it

Editor
Carter Ross
cross@nbmedia.com

NewBay Media
www.nbmedia.com

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From Fossil To Future: An Evolution In Microphones

Alistair McGhee considers what old-time and brand-shiny-new microphones would gain pride of place in his microphone cabinet. And it's a well stocked cabinet at that.

Evolution is a funny business. Not funny 'haha' you understand, but funny peculiar. I remember well the sudden chill in a conversation with an expert American palaeontologist when I asked him why in the vigorous debates with his Creationist opponents he didn't turn up with a 'bucket of fossils of intermediary forms'. The fact is that in many (though by no means all) cases it's harder to map the steady march of the accumulated results of variation and natural selection than you might think. Consider the world of pro-audio. In some areas the rate of technological change is staggering, though to be fair probably hard to appreciate if you were only dealing with the fossil remains of our high tech toys. The power of digital audio workstations advances almost daily, and whole new species of audio technology arise overnight. Take solid state hand held recorders. Ten years ago virtually nothing, now a vibrant and ever expanding ecosystem.

Not Extinct Yet

Which brings me to the thorny subject of microphones. Here evolutionary rates are as baffling as anything buried in ancient shale. New body plans (try the Black Hole from Latvian mic makers JZ, or the line array KEM 970 from Gefell) are appearing while ancient species such as the Shure SM 58 and AKG 414 still thrive. When the 'extinct' Coelecanth was discovered in 1938, the headlines boldly splashed 'living fossil' across a thousand miles of newsprint. The mic equivalent is probably the Coles commentators lip mic, it still makes perfect evolutionary sense if you want to hear someone over the racket of a football crowd. That's not to say it hasn't changed, and if you have 10 minutes I'll tell you my L2 story some time.

Why is there this wildly mixed economy? How can designs well established forty years ago and more maintain a slice of the market when all around them new products and designs rise and fall? As we've invented the DSP emulator, why hasn't the range of microphones available collapsed into one or two dominant models that out-compete all others? Well, the reasons are manifold – partly it's a physics and physicality thing. Some mics need to be small – the Sony ECM 50 niche has seen progressively smaller personal mics, and you now have a choice between virtually all your favourite traditional manufacturers: Sony, DPA, AKG, Beyer, Sennheiser. Is it me, or has this been an area not put under pressure from cheap copies to date? The point is the best gun mic in the world is no good if you want to pin it to someone's tie. And of course the most neutral mic in the world is useless if it can't take a beating on the road and your living happens to be on the road. But even in the studio where everything is under control, there seems to be that strange mix of the vintage German classic, say Neumann U47 alongside the gradually evolved AKG C414, or the new boy fresh off the SE Electronic designer's CAD screen.

The Cost Of Reputation

Then there's the price point element. Snapping at the heels of the established European brands, Audio Technica has a mic for every occasion, Røde is building a tidy reputation, and SE is a powerful presence. And then you have products competing at the high end – in effect declaring we do the same old thing but we do it better. Here you find Brauner, JZ, Charteroak, ADK, and many more.

But when you've considered the different utilitarian pressures – the engineering solutions, the pricing, and performance, you're still left with huge personal factors. Traditional loyalty – "we've been using these mics for 20 years, and we know and trust the designs and the reliability" – same again please. Or peer pressure – all of a sudden everyone has an Earthworks omni or Sanken gun mic: "I must have one in my kit". And actually fashion in and of itself is no reason to reject something. If 70% of live engineers have an SM 58, then there might just be a reason for that. But beyond even these motivations, the mic buying heart has reasons the head-wallet axis knows nothing of.

A Glossy Front

Who can resist the lure of a nicely finished, high performance electro acoustic instrument that just might turn me into recording genius. Maybe simply by putting a Peluso or a Neumann digital in front of the talent I will be turned from jobbing engineer to Master of the Sound Universe. That's partly why a company like Violet will always attract my attention – make a mic that cries out "look at me, I know what I'm doing", and I'll be lingering long over the glossy brochure. Which leads me to the conceit of this rather rambling editorial.

In The Cabinet

When I first joined the BBC, one of the genuine joys was opening a well-stocked mic cupboard, the contrast between the brushed metallic finish of the mics against the green baize of the individual compartments brought a smile to my face. And if I ruled the world or even just won the lottery, I think I'd find an old BBC mic cupboard, polish up the mahogany veneer, and fill it with enough mics to last me a lifetime.

On the top shelf out of the reach of mere children we have the big boys: side address large diaphragm condensers. The first three

are easy: Neumann U87, AKG 414, and Beyerdynamic MC840. Simple black classic.

This selection is open to the obvious criticism that all these manufacturers have other newer, sexier, smaller, etc, products. And that of course is true. But I've never heard anyone say "Oh xxxx, all I've got to work with is a U87." No sir.

But this area of the market has been attacked at both ends, resulting in some very nice-to-have alternatives. Sony offers the C-38B, and even the valve-based C800GPAC. I can't say I've ever seen one of these ten thousand dollar mics, but I want one, obviously. Back to Germany for two very desirable brands, Brauner and Gefell. Brauner is a newish kid on the block, aiming almost entirely at this niche. Gefell on the other hand... well check out its website for a full history – it's been continuously making mics for eighty odd years, and is much underrated. And what about that last little slot, what shall we put in there? A classic U47 would be my choice, but despite the fact it's the best vocal mic I've ever heard, vintage mics are a tricky business. And probably sample variation over this time and the unguessed indignities of 40 years make buying one a real risk. Don't let me stop you – I'm going to slip in a Wunder CM7-GT, or for a bit less cash a Gefell UM 92.1 S. M7 capsule and valve electronics – yeah baby.

At the more cost conscious end a similar battle rages. Audio Technica has a range of solutions starting with the ever-popular AT4033. Violet/Blue represents Europe here, and for a more easterly (or should that be southerly) approach, the Rode NT series and SE electronics command a lot of respect. We have some SE mics in our new Hoddinott Hall, home of the National Orchestra of Wales, and I regularly use Rode's stereo mic. One of the interesting things about Rode and SE is the breadth of their ambition, check out their whole range.

A Box Of Pencils

Down a shelf to the 'pencil' mics. Our serious music engineers have sworn by Schoeps and DPA for years now; if you looked in Huw Thomas's (Senior Orchestral Music Balancer) kit, that's what is bringing home the bacon. Sennheiser's MKH series are a popular choice for film and TV sound recordists, and they're not out of place in the concert hall either. I'm very fond of the Neumann KM184 (and brethren) series – and there's digital there if you want it, and every doo-dah under the sun.

For inexpensive flexibility the AKG Blueline series is hard to beat; a great range of capsules (including personals) and a great bayonet mounting system. The Audio Technica 4041 is very popular and deserves a mention, while a bit more aspirational are the products from Earthworks. Its omnis have a great reputation and come in matched pairs in a cherry wood case. Sweet – out of the case into the cupboard.

A quick whip round gun mics: Sennheiser 416, DPA 4017, and something from Sanken. Sadly lots of interesting Sanken mics are "not available in the EU". But I want them. Oh yes, and a Schoeps CMIT 5U in that lovely blue finish. Strapped for cash – head for AT. I haven't got the space to eulogise the 416 and 4017. Honestly.

Going Live

Live vocal mics. SM58, SM58, SM58. Every week Cowon or Creative come up with an iPod killer. Pass me Apple's financial results for last year. iPod alive and well. Same with the 58. Competitors come and go but it rocks. Flesh the collection out with the Audix OM series, and Beyer M88TG. Electrovoice is a long time player in this field, and AT, Beyer, and Sennheiser offer extended choice.
As an aspirational mic – the Gefell MD 100.

Live vocal mics condenser. In brief, the Neumann KMS 105 – love it. Aspiration: Schoeps CMH 6 – seems to be designed by Gerry Anderson for use in Thunderbirds. But it's a Schoeps, so it's bound to be good. And a Shure KMS 9. Why? Because it's there.

I've only just realised I'm never going to fit it all in, the world of microphones is just too big. So how about ribbon mics to finish? We begin with a trio of British mics; Coles 4038 – please stand in the presence of greatness (and make sure you're ready for the 300Ω business). Coles 4104 commentators mic – keep standing. Coles 4040 – never seen one, but I think it's a 4038 with new magnet technology – what's not to like? You may be seated. Beyer M130 and M160, great ribbons at a reasonable price. Aspirational – Royer, AEA, and now SE electronics.

Bottom Shelf

Oh hang on, there's just a little room left on the bottom shelf. Everything made by Pearl in Sweden, Shure lazy mic, an AKG 451, and a Calrec for old times' sake, apple and biscuit, a Soundfield, AT 892 headworn, Electrovoice RE50 and RE20, Neumann BCM 104, Beyer CK900 and... now it's getting hard to close the door. Better leave it there.

Dedicated to the memory of Roger Derry. His expertise, not least in the realm of microphones, so lightly worn and freely shared is sorely missed.

Getting Techno-Physical

Jörg Wuttke offers his take on attitudes to microphone selection, testing, and placement. Should we trust the heart, or the mind?

The artistic viewpoint sees the microphone almost as a musical instrument – an extra member of the orchestra or an accompanist to a singer. With such a view it can be very difficult to judge the microphone objectively. Elements of fashion, nostalgia, and a degree of sympathetic magic can lead to a very subjective choice that owes little to rationality. The techno-physical approach is the reverse of this – a wholly reasoned and objective view that requires a basic knowledge of physics. Within certain restrictions, the choice of microphone will produce a sound that is predictable and can be tailored with some precision to what is required.

Physics Versus Emotion

Despite what many would regard as the benefits of the techno-physical approach, a great deal of the literature and advice on the use of microphones is based on apparently non-technical considerations. Often a microphone will be listed as best suited for vocals simply because it has, by chance, sounded pleasant on a previous occasion or looks similar in shape to one that was used in that way.
Given that the majority of users of microphones have very little engineering background and are far more familiar with the world of art, this should not be surprising. They have no other guidelines to follow.

Art and emotion do, without question, have a central position within music but, equally, the key to the successful recording of it is a technical understanding of the devices that need to be used. Trying to muddle up both approaches in some haphazard fashion is no help either.
That leads to quaint notions, such as that tube (valve) microphones give 'a warm sound' because they become physically warm in use – or that large microphones yield a bigger 'sound image' (whatever that means) than smaller designs. This latter notion undoubtedly stems from folklore that has been fostered by those with vested interests in the promotion of large-diaphragm microphones. In purely physical terms there is, of course, no requirement for the diaphragm to be large in order to be able to respond to low frequencies.

Making Comparisons

Every innovation needs to be tested and proven – which leads us to the awkward problem that some of the steps forward are very small ones. To hear them requires controlled listening under good conditions and, above all, with a proper reference; but all too frequently a new product or design is assayed in splendid isolation. Expectation or fervent belief that it must be better strains judgement, and within a short time highly coloured opinions are circulating and a myth is built which is as baseless as it is hard to eradicate.

There really is no alternative to properly controlled listening tests if audio devices are to be compared in an impartial way. AB tests are limited to distinguishing the better of two options, but they alone can reveal what differences there are and if, indeed, they actually exist. And 'properly controlled' should not be skimmed over lightly – for instance, adjusting levels needs to be carried out with great precision since, with signals of equally high quality, even an almost imperceptibly higher level on one will skew judgements in favour of it. Such experimental pernicketiness has to be refined even to the extent of intentionally adding a small imbalance of levels but on a reciprocal basis where, say, microphones have different frequency responses that affect perceived loudness.

Microphones for a Particular Use?

Although it is extremely common to be told that such and such a microphone is good for, say, violins, this poses the question of why it should be considered to be so. Should a microphone be chosen purely on the grounds of what the sound source is? We don't, after all, have more than one set of ears to hear everything, and common sense dictates that if the microphone is an ideal one it transforms a sound into a perfectly corresponding electrical signal. That suggests that the closer a microphone is to the ideal, the more neutral it sounds, and the more universally it can be used. There is certainly a wide variety of very different top-quality microphones, but it would be wiser to see these as physically suited to a particular application rather than a particular sound source.

As far as the 'perfect' microphone goes, omni-directional capacitor (condenser) designs approach the ideal very closely. Where you want to favour sound from a single direction and exclude neighbouring instruments or unwanted sound, then of course you need a directional microphone which will be a little further from perfection. For a start, any directional microphone (such as a cardioid) will demonstrate the so-called proximity effect when used close to a sound source. Low frequencies will be accentuated. For a microphone that will commonly be used in this situation a compensating frequency

response can be designed into the capsule. Such a microphone can therefore be described correctly as suitable for close use – its designed task – but not specifically for any one instrument.

Of course it would be possible to choose a far from ideal microphone that would produce a particular characteristic variation to the sound – more accurately termed a 'distortion' of it – but this seems a perverse approach if you are listening to a Stradivarius. Of course, if the microphone is less than perfect because it cannot handle high frequencies, it might still be adequate for use with a bass drum (though this is not the same thing as saying that it is intended for that purpose).

Certain distortions produced by non-ideal microphones may not, in themselves, be unattractive, but it is better to achieve these effects by starting with a near-perfect microphone and using equalisers and similar devices since this approach allows sonic changes to be measured and adjusted precisely. The good cook always prefers to start with a dish that is unseasoned, and then to add salt and spices for subtlety and brilliance, rather than to tame one which comes to them
with rank and unidentifiable flavours.

Placing the Microphone

If the choice of a microphone requires some understanding, then placing it needs at least twice the thought. Not only is
its position relative to the instrument or sound source critical, but also its position within the room or acoustic environment. When it comes to stereophonic recordings (we will stick to the simple, classic type with just two microphones) then two additional factors have to be considered – the precision of localisation and the sense of spaciousness. If equations with four unknowns are frightening, then the techno-physical approach does provide a steadying hand. Michael Williams has determined a set of laws that determine the angle and distance between microphones as a function of the directivity pattern and the width of the sound source in order to
give accurate localisation.

The Use of Extremes

Another helping hand in coping with complex conditions is to examine extreme positions and then work 'inwards' towards a more useful middle position.

For microphones, there are three pairs of opposites that are useful to analyse:

1. The soundfield.

The direct sound component of a soundfield exists close to the sound source. It arrives before any other sound and from one single direction. Conversely, diffuse or reverberant sound is the result of all the many reflections that exist in a room or sound space. It has no preferred direction of propagation – unlike simple reflections or echoes – and no defined phase. Direct sound gives clarity and intelligibility, diffuse sound gives a sense of space and context.

2. The working principle.

For the principles of operation of a microphone, the extremes are that of the pressure-operated transducer and the pressure-gradient type (the pressure-gradient is proportional to the velocity). The pressure-operated transducer senses sound pressure at a single point and is thus inherently omni-directional. Pressure-gradient capsules sense the difference in sound pressure at two points and are inherently bi-directional (figure-of-eight). All other directivity patterns, such as cardioids, can be analysed in theory (and sometimes even in practice) as combinations of the omni and figure-of-eight patterns – except for the special cases involving parabolic reflectors or interference tubes (shotgun microphones).

3. Fundamental stereo principles using differences of level or time.

The last pair of extremes involves the relationship of stereophonic microphone pairs – which we will conveniently define as a 'main microphone', in that the pair provides the essential spatial information for a stereo 'stage' irrespective of any additional spot microphones. One extreme places both capsules very close together, perhaps even in the same housing. Usually one capsule is vertically above the other and the separation is effectively zero in terms of the wavelength of sound. The capsules are physically 'coincident', and since the sound arrives at both simultaneously, they are also coincident in the time domain.

The contrasting extreme is A/B where the capsules are spread far apart. 'Small A/B' indicates distances of 40-80cm, 'Large A/B' is even more extreme with distances of some metres. In terms of both position and time, they are far from coincident. Coincident stereo techniques carry the benefit of excellent localization, but at the cost of a centre image that is over-emphasised since much of the sound is recorded in mono. This will also explain the feeling of a lack of spaciousness. The percentage is dependent on the directivity of the capsules, but is 50% for cardioids – you remember, a cardioid can be resolved into a combination of a figure-of-eight and an omni, and two onmis in the same spot capture the same signal.

Conversely the spaced A/B technique carries an enormous, if somewhat artificial, sense of spaciousness (Stanley Lipshitz calls it 'phasiness') that coincident techniques cannot match (except Blumlein). The reason is that differences in arrival time at the widely spaced microphones translate to differences in phase in the stereo output, and thus 50% of the direct sound is transmitted out-of phase.

Soundfields and the operating principles of microphones rarely raise many passions, but the spacing of stereo microphones generates intense debate.

Positions become extremist rather than simply extreme, and the techniques become viewed as radically different philosophies rather than points on a continuum. We can analyse the techniques scientifically, but the choice does come down to personal taste – even perhaps, emotion – in the end.

The Author

Jörg Wuttke studied electronics and telecommunications at Karlsruhe University, specialising in acoustics. He joined Schoeps GmbH as a Research Engineer in 1970, became its Chief Engineer in 1972, and is now its Technical Director. He has been a member of the AES DIN Standards Committee on Microphones and Headphones since 1972. He maintains an avid interest in listening to music and recording live concerts.

Audio Media wishes to thank Jörg Wuttke of Schoeps, Rycote, and Chris Woolf *(The Microphone Data Book)* for their permissions to use this article.

- **w** www.schoeps.de
- **w** www.rycote.com
- **w** www.microphone-data.com

Audio-Technica – The Drive for Innovation, Quality, and Consistency

The youngest of the world's 'big four' microphone brands, Audio-Technica has employed design innovation and advanced manufacturing to consistently break the price/performance barrier with leading products for studio, broadcast, and live production applications.

As a world leader in the design and manufacture of high performance microphones and wireless microphone systems, Audio-Technica has developed market leading product ranges in the three principal professional audio applications – music recording, broadcast production, and live production. In each of these areas Audio-Technica has developed product ranges that have raised the performance bar and established a reputation with industry professionals for design, engineering, and build manufacturing excellence that is second to none.

It's an engineering and business philosophy that originates with the company's inception in 1962 when founder Mr. Hideo Matsushita introduced a moving-magnet-type stereo phonograph cartridge. The company went on to design and produce phono cartridges and tone arms, both under its own brand and for others, including the legendary NHK broadcast organisation. The same high precision design and engineering techniques that made the company's various cartridge designs so successful were also applied to the manufacture of microphone and headphone products throughout the 1970s and 1980s, earning the brand prestigious status among audio professionals.

In The Studio

It was with the introduction of the AT4033 in 1992 that the company established a leading position in the studio recording market. The AT4033 was the first ever high performance large studio condenser microphone priced at under $1,000; anticipating what today is a highly competitive market sector for affordable high performance studio recording microphones.

Exploiting the very latest design, engineering, and production techniques, the AT4033 provided performance from a back electret design that rivalled famous studio condenser models several times more expensive. Among the many design innovations to enable such performance was a specially contoured, vapour-deposited diaphragm, just two microns thick (compared with 10 microns for most large diaphragm condensers). This ensured very high-resolution signal reproduction. Coupled with low noise, symmetrical, transformerless circuitry, this produced an exceptional transient response and low distortion output. Special accelerated diaphragm aging methods ensured performance remained consistent over time, which with the specially designed damping and suspension provided for a more linear response over a wide frequency range, even at high SPLs.

Modern production methods enabled a level of consistency that ensured the identical performance of every microphone; with no necessity to produce the microphones in 'matched pairs' for stereo recording.

Metallica FOH engineer 'Big' Mick Hughes employs an array of Audio-Technica microphones on stage with the world's biggest metal band.

Selling in thousands, the success of the AT4033 established the company's reputation as a high-end studio microphone manufacturer and spawned the 40 Series large diaphragm condenser range. All models in the 40 series adhere to the same paradigm of high performance and value for money, and as testimony to their quality, since the start of 2008 also come with the company's Lifetime Warranty.

Two new models in the 40 Series – the AT4021 and AT4022 – are introduced for 2009. Upholding the exacting standards of design and construction for which Audio-Technica is known, the new condenser models offer high SPL handling and wide dynamic range. The cardioid AT4021 and omni-directional AT4022 deliver an extended frequency response and low-self noise, ideal for today's demanding digital recording situations.

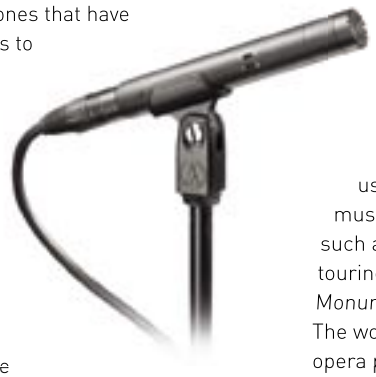
The Pigeon Detectives – on tour with a full complement of Audio-Technica microphones for vocals and backline.

Audio-Technica microphones are relied on for the broadcast of the biggest international sporting events.

Modern day classics of the recording world, the 40 Series microphones are lauded by internationally renowned engineers and producers like Phil Ramone, Joe Chiccarelli, Frank Filipetti, Nathaniel Kunkel, and David Reitzas. These are among the world's most successful and best selling studio microphones today.

For Broadcast

In the broadcast industry, Audio-Technica is a brand that has become synonymous with high performance location recording microphones that have enabled programme makers to achieve an ever-greater sense of reality in the transmission of major outside broadcast events. In particular the company has been associated with the broadcast of international sporting competitions. The official broadcast productions of the Summer Games in Atlanta City, Sydney, and Athens, the Winter Games in Salt Lake City, and the more recent 2008 Beijing Games, have featured literally thousands of Audio-Technica microphones. In particular, the company's innovative shotgun designs have enabled greater capture of close up audio in games and competitions. The AT815ST stereo shotgun was designed specifically for the Sydney Games in 2000, and has been a fixture of broadcast coverage of such events since. New for 2009, the BP4071 and BP4073 microphones are tailored to the needs of critical broadcast applications with excellent signal-to-noise ratios and RFI-immunity.



New 40 Series AT4022 studio condenser mic.

Innovative acoustic design also ensures that the new models offer levels of directivity comparable to mics up to 50% longer, and as such deliver unequalled performance in a compact package.

On Stage

In recent years Audio-Technica has won devotees among artists and sound engineers alike, for Artist Elite Series performance stage microphones, in both wired and wireless form. With users and endorsees as musically diverse as The Pigeon Detectives, Alesha Dixon, Russell Watson, Rush, Linkin Park, and Metallica, AE Series handheld models – both condenser and dynamic – are famed for their sound quality. When partnered with Audio-Technica's 5000 and 4000 Series wireless technology, transmission quality is such that engineers as seasoned as Dick Rabel have gone on record as saying that there is "remarkably little difference" between wired and wireless models with the same capsule.

The high signal to noise and low signal compression performance of Audio-Technica's 5000 and 4000 wireless technology lends these systems for use on the most critical musical productions, such as the massive world touring opera production, *Aida Monumental Opera On Fire*. The world's largest touring opera production, Aida carries a 46-channel 5000 Series wireless system.

On backline too, Audio-Technica is a de facto standard for many world-class sound engineers, often exclusively. Engineers like 'Big' Mick Hughes (Metallica, Def Leppard, Slipknot), Jim Warren (Crowded House), Dave Bracey (Robbie Williams), Dick Rabel (Russell Watson, Katherine Jenkins), Mark Jones (Embrace), and Andy Hawkins (Pigeon Detectives). For these and many others, models like the AE2500 dual element design, the AE3000, AT4050, AT4041, and the ATM350 are essential tools of the trade. These live production series are now joined by the re-engineered Artist Series, offering unrivalled performance at competitive price points: they are already making an impression in the market, with singers including Jodie Jones using the ATM710 condenser exclusively on stage, and other models earning a place on backline rosters.

Audio-Technica's hard-working Artist and Artist Elite wired microphones are now covered by the company's Lifetime Warranty.

Audio-Technica has extended its unique 'lifetime warranty' – offered on top of the 40 Series studio condenser range – to include Artist Elite and Artist Series microphones in 2009. The extended warranty is offered free of charge and is applicable on all wired Artist Elite and Artist Series microphones sold by authorised resellers in EMEA from May 1, 2009.

The warranty reflects the reliability and engineering quality across the three ranges. Users of Audio-Technica microphones in live production environments can now enjoy the same peace of mind as their studio counterparts.

audio-technica
always listening

AUDIO TECHNICA
Justin Frost
Area Sales Manager, Southern England
t +44 (0) 113 277 1441
e jfrost@audio-technica.co.uk

Harvey Roberts
Senior UK Marketing Manager
t +44 (0) 113 277 1441
e hroberts@audio-technica.co.uk

International
w www.audio-technica.com

Audix Microphones: Consistent Innovation

Cliff Castle, Co-Founder of Audix Microphones, salutes the Beach Boys 25th Year Anniversary Special Tour in 1986

The following is a snapshot interview with Cliff Castle – co-founder of Audix.

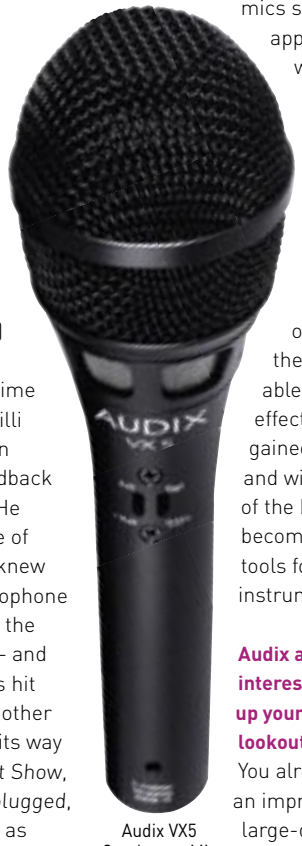
How did Audix get its start?

Audix had its humble beginnings back in 1984 in Redwood City, California in a suite of offices totaling about 300 square feet! Initially, we were set up as the distribution arm for Audix Japan, a microphone company that was manufacturing strictly for its domestic market. The microphones were good, but not good enough to compete with the industry standards of the day. One thing led to another and we started redesigning the microphones and improving the performance characteristics. The first two years were pretty painful but, by 1986, we introduced our first high-level vocal performance mic, the OM 1, which received very positive magazine reviews and made its way into high profile users including the Beach Boys, one of my all time favorite groups.

Alanis Morissette on her Audix OM5

The OM series vocal mics are more popular today than ever. How has Audix maintained this success?

We developed our own capsule design that featured 'VLM' technology, which stands for 'Very Low Mass'. These lightweight diaphragms are able to react more quickly to incoming sound waves, which result in a more natural, accurate sound with better transient response. This diaphragm design, along with the hypercardioid design of the polar pattern, provided unprecedented gain before feedback, still unparalleled to this day. Artist and engineer support has also helped. We happened to be paying attention to the 'grunge' groups emerging out of the Northwest in the early 1990s. I demoed the OM7 to Dave Rat (Rat Sound) who was providing sound for two unknown groups at the time – Pearl Jam and Red Hot Chilli Peppers. He flipped out when he heard the gain before feedback of the OM7 in the monitors. He thought there was some type of voodoo going on. Before we knew it, the OM7 became the microphone of choice for just about all of the groups in the grunge scene – and fortunately for us, the groups hit the mainstream. By 1995, another of our mics, the OM5, made its way into the hands of *The Tonight Show*, *The Late Show* and *MTV Unplugged*, as well as many artists such as Alanis Morissette, Bonnie Raitt, Bruce Springsteen, and Crosby, Stills, and Nash – all of whom continue to use their Audix mics to this day.



Audix VX5 Condenser Mic

Audix is now established as a leading manufacturer in drum and percussion mics – how did that come about?

Being a musician helps. I realised that drummers and percussionists, the guys who provide the heartbeat for any musical content, were being neglected as far as mics specifically designed for their applications. The Sennheiser 421, which we recognised as a great mic, had become the standard percussion mic for pros. The downside to that mic is that it's fairly big, cumbersome, and expensive. So we came up with the D series – application-specific mics for drums. Machined at Audix out of high-grade aluminum bars, these mics are compact, accurate, able to handle high SPLs, and cost effective. After a few years, they gained widespread recognition, and with the most recent addition of the D6 and the i5, these mics have become really good, dependable tools for a wide variety of instrument needs.

Audix also continues to develop interesting condenser mics. Any tricks up your sleeve that we should be on the lookout for?

You already know about the SCX25A, an improved version of our formidable large-diaphragm condenser mic that is ideal for acoustic instruments, overheads, and vocals. The Micros™ are the world's smallest standalone condenser microphones with an integrated

Audix Leads the Pack in Percussion Mics

With the introduction of the D-series dynamics in 1993, Audix created a new category of microphones specific to drums and percussion. Shortly after, Audix further expanded this concept to include prepackaged sets of microphones in various configurations. In 2000, Audix created the drum mic kit. It was an instant success, and many other brands followed suit soon after.

With the introduction of the D6 and the i5, Audix configured the DP5A, the DP7, and the DP-Elite8 drum mic packages. All of the kits feature the best of the best, and provide high performance and excellent value. The DP7 was bestowed the prestigious MIPA international award of 'Best Drum Microphones' of 2007, an award voted on by 107 magazines representing 25 countries.

The heart of the DP5A mic package (MSRP of US$1,149) is the popular D6 dynamic microphone for kick drum, characterised with full, robust sound, with clarity and attack. For snare drum, it's the i5, a perfect complement to the D6. The i5 not only provides clear and natural sound reproduction, it is extremely durable and capable of withstanding the occasional and unavoidable 'stick hit' during the course of a gig. For rack toms, there are two D2 dynamic microphones. The D2, described as the 'king of toms', will capture all the subtleties and overtones of 8–12" toms. For floor tom, there is the D4, unrivalled in its ability to recreate the extended response of a low frequency drum with extreme accuracy and detail. Additionally, there are four D-Vice spring-tensioned rim mounting clips which eliminate the need for mic stands for snare and toms.

The DP7 (MSRP of US$1,747) includes the same mics as in the DP5A, with the addition of two ADX51 'pencil-style' cardioid condenser microphones for overheads. The ADX51, with switches for pad and roll-off, captures the cymbals and ambient sound of the full kit, without picking up too much bleed from the other instruments on stage.

For those artists and engineers looking for the ultimate miking solution, there is the DP-Elite8. This package is configured with the same basic five microphones found in the DP5A, with the addition of two SCX1-C cardioid condenser microphones for overheads and an SCX1-HC hypercardioid for high hat. The DP-Elite8 is priced at an MSRP of US$2,569. All mic packages include a sturdy aluminum carrying case.

DP7 is our top selling drum pack and will outfit any five piece drum kit.

mic preamp. The 50-inch carbon fibre MicroBoom™ incorporates the Micros™ in a way that makes it the ideal solution for choir miking without having to hang mics from the ceiling. Also, keep an eye out for the VX5 handheld condenser vocal mic with pad and rolloff; it is bound for stardom!

The Micros™ – Smaller is Better

Audix has enhanced the award winning Micros™ Series, the world's smallest condenser microphones with integrated preamp and detachable cable. The M1244B, M1250B, and M1255B measure slightly over two inches long with a weight of only .6 ounces. They feature a variety of polar pattern options, very low noise circuitry, and complete immunity to RF. In addition, all electronics are built-in to the microphone, so no external phantom power adapters are required. The Micros™ are a great low profile solution for portable overhead miking of choirs and plays, corporate presentations, discreet instrument miking for symphony, orchestra, and other live sound applications where placement and sound are critical.

M1255B shown here with hanger for overhead applications. The MicrosTM Series microphones are only 54 mm long and fit in the palm of your hand.

AUDIX CORPORATION
PO Box 4010, Wilsonville, OR 97070, USA
t +1 503 682 6933
f +1 503 682 7114
w www.audixusa.com
e info@audixusa.com

UK
SCV London
t +44 (0) 208 418 1470
e sales@scvlondon.co.uk

Blue.
The Microphone Company of Today.

Blue Microphones is commonly referenced as 'the microphone company of today' because of its unique philosophy: to meld the heritage of the past with current cutting-edge technology, leading to continuous innovation in the field of audio recording.

The Flagship Bottle Series

Designed for the most discerning recordists, the Bottle Series (consisting of the Bottle, the Bottle Rocket Stage One, and Bottle Rocket Stage Two) feature microphones capable of providing a wide palette of tonal characteristics and pickup patterns to satisfy even the most discriminating tastes. The Bottle Series integrates the best of Blue's discrete class-A circuitry with a unique and revolutionary system of interchangeable capsules, like Blue's Bottle Caps, that provide the engineer with a wide range of potential tonal characteristics.

The Bottle

Blue's flagship recording tool, the Bottle, is our highest achievement in quality and innovation. Meticulously hand assembled, the Class-A discrete Bottle utilises a single EF86 pentode vacuum tube in triode mode. The Bottle combines low noise and superb transient response, and when combined with Blue's nine interchangeable Bottle Caps capsules, provides the recordist with an entire mic cabinet all in one mic!

Bottle Rocket Stage Two

Designed for speed and transparency, the Stage Two's transformerless, Class-A discrete tube amplifier circuit delivers low noise and superb transient response. Like the Bottle, the Stage Two has the ability to hot swap up to nine different capsules for amazing versatility.

Bottle Rocket Stage One

The Stage One is Blue's most accessible mic with a foundation of interchangeable capsules. The Class A discrete solid state Stage One has a very low self-noise specification (←7.5dB) and a very high output level (+12dBV), making it the perfect choice for today's high sample rate/deep word length digital platforms.

The Blue Story

Founded in 1995, Blue has grown from a desire to refurbish vintage high-end microphones for fellow musicians into a unique, multi-faceted audio company with a prestigious line of award-winning microphones and accessories. In the 1980s, Bernard 'Skipper' Wise, a professional musician and producer with over 100 albums to his credit, and Martins Saulespurens, a renowned audio and electronics engineer, began repairing and restoring microphones for fellow artists who longed for the character and quality of microphones produced in the 1940s and 50s (oftentimes thought of as the Golden Age of Microphones). Realising that the dawn of digital recording could elevate microphone performance far higher than the models of the Golden Age, they endeavored to start their own microphone brand. Blue Microphones was founded in 1995 expressly to improve the front-end of audio recording by utilising the increased bandwidth benefits enabled by the advances in digital processing (e.g., extended frequency response, dynamic range, and project recording capability). These microphones would harness this new era of digital technology, eliminating the need to suppress the most colourful aspects of the audible spectrum (thundering lows and piercing highs) that were previously constrained by the analogue process of recording onto tape. Basing many of their concepts, designs, and technology on knowledge gleaned from years of repairing and improving classic microphones from a wide variety of manufacturers, but also simultaneously integrating new technologies, materials, and a first-hand knowledge of today's recording processes, Blue began to pioneer the perfect analogue input devices for the digital age.

Application Specific Series

Every Blue microphone in the Application Specific Series contains its own proprietary capsule that is hand-tested to capture a specific sonic signature. Blue's philosophy is to create microphones that are unparalleled for their intended application. For example, the Mouse is a low-frequency focused microphone that specialises in capturing the bigger-than-life lows of kick drums, bass amps, and deep vocals, whereas the Dragonfly is designed specifically to capture and thicken thin sounds from soprano vocals and instruments like drum overheads.

Cactus: Nine-pattern tube condenser – vintage vocals
Kiwi: Solid state multi-pattern – Blue's signature contemporary vocals
Mouse: Bottom end boom – bass, drums & broadcasting
Woodpecker: Only ribbon mic with true top end – classic warm sound and an ultra-smooth top end
Dragonfly: Thickens thin sound sources – high vocals, acoustic guitar, drum overheads
Blueberry: Commanding, intimate presence – vocals moved to the front of the mix
Baby Bottle: Midrange focused – rock vocals, guitars

L–R: Cactus, Kiwi, Woodpecker, Mouse

L–R: Blueberry, Dragonfly, Baby Bottle

Capture Every Note

Blue's philosophy is that all great sound begins with the capsule. Hand assembled and tuned, our proprietary capsule designs capture specific sonic signatures in specific ways, creating completely different tonal characteristics for each mic in the Blue lineup. In addition, Blue employs state-of-the-art technology that ensures the purest possible signal path and Class-A fully discrete circuitry with no ICs, pads, or filters; each microphone is designed to fill a specific role in a recordist's repertoire. The result is a portfolio of professional microphones that create a palette of sounds, enabling artists to truly realise the sonic landscape of their vision.

Innovative Consumer Electronics

Snowball

The Snowball is a direct plug n' play USB mic for either Mac or PC – no drivers are required. With its dual-capsule design and unique three-pattern switch (cardioid, cardioid with -10dB pad, and omni), the Snowball can handle everything from soft vocals to the loudest garage band, and it's ideal for podcasting.

Mikey

Mikey is Blue's new award-winning recorder for the iPod that can record lectures, voice notes, live music, and interviews in stunning high fidelity. Blue's superior quality stereo condenser capsules, three-position user selectable gain settings, and a unique user-positionable head allow for amazing high quality recordings from a whisper at 30 paces to a blasting rock concert. Compatible with a wide range of iPods, it's never been easier to get award-winning Blue quality sound on the go.

L–R: Icicle, Snowball, Snowflake, Eyeball, Mikey

Sound for Everyone, Everywhere

With the advent of increasingly powerful personal computer recording software such as Apple's GarageBand™, Blue realised that project studio recording presented the next revolution of the recording industry. Believing that the lack of a high-quality USB microphone to protect the signal source would be an impediment, Blue developed the Snowball, now the number one-selling wired condenser microphone in the world. Throughout its development process the Snowball was designed with musicians in mind, however people quickly began to adopt the product for consumer applications such as podcasting, chatting, and narration. These new and constantly expanding applications have allowed Blue to tap into its Pro Audio DNA to launch a line of products catering to life outside the studio. These include high-quality USB products for both Mac and PC, iPod accessories, and an XLR-to-USB converter that allows everyone to take advantage of the quality and performance inherent in every Blue microphone, right on their own computer.

At Blue, we're 100% committed to getting the very best microphones in the world into the hands of those who have a passion for high quality audio, believing that everyone, everywhere, should have access to great sound. This is our heritage and will always be the core focus of everything we design and produce. Blue is the microphone company of today, with products built for the next generation of sound.

Blue®
Microphones

BLUE MICROPHONES (NORTH AMERICA)
t + 1 818 879 5200
f + 1 818 879 7258
e support@bluemic.com
w www.bluemic.com

TC ELECTRONIC (EUROPE)
Sindalsvej 34
8240 Riskkov
Denmark
e info@tcelectronic.com
w tcelectronic.com

DPA Microphones

Professional Microphone Solutions for Any Need

DPA Microphones is a leading manufacturer of high quality condenser microphones for professional applications in studio, broadcast, theatre, video/film, and sound reinforcement environments. All DPA microphones are designed and manufactured in Denmark, combining state-of-the-art technology with unique design.

DPA 4099 Clip Microphones

The 4099 mics and mounting systems are meticulously designed and optimised for each of these four instrument families.

4099 Guitar

Perfect for acoustic guitar, mandolin, banjo, and dobro, the 4099 Guitar offers practically unlimited placement possibilities as well as a natural sound.

4099 Violin

Violin and viola players will appreciate how gently the 4099 Violin adheres to a prized instrument while its unobtrusive design keeps it from getting in the way.

4099 Key Features

- **Superior gain-before-feedback**
- **Wireless compatible**
- **One-hand mounting**
- **Holder gentle to the instrument**

4099 Trumpet

An ideal tool for trumpet and other brass instruments, with or without mute, the 4099 Trumpet effortlessly handles even the highest sound pressures.

4099 Sax

Soprano, alto, tenor, or baritone, the 4099 Sax fits them all, providing exceptional gain-before-feedback and a broad spectrum of uncompromised tonal possibilities.

DPA 5100 Mobile Surround Microphone

The DPA 5100 is a mobile surround microphone whose compact size and ease of use come at no sacrifice to its stunning sound quality. Ideal for bringing truly engaging surround ambience to HDTV production, the versatile 5100 can be mounted on a camera or microphone stand, suspended, or simply handheld via a handgrip.

5100 Key Features

- **Plug-and-play solution**
- **Lightweight and portable**
- **Rich, smooth, and fully enveloping sound character**
- **Discrete 5.1 analogue output – no processing needed**

A completely self-contained plug-and-play solution for 5.1 audio capture, the 5100 employs five miniature pressure transducers that exhibit extremely low sensitivity to wind and mechanical noise, low distortion, highly consistent low frequency response, and enormous dynamic range.

The end result of DPA's innovative design approach is a surround atmosphere that is rich, smooth, and fully enveloping, exemplary in its coherence, channel separation, and localisation accuracy.

Other Surround Solutions

The DPA Decca Tree (D3) and Surround Mount (S5) are highly versatile and stylish microphone mounts for two, three, or five microphones. The unique building block design provides extreme flexibility, allowing the possibility of numerous configurations, both fixed installations and mobile setups.

D3/S5 Key Features

- **Flexible and lightweight**
- **Elegant with integrated cable option**
- **Matched surround microphone kits**
- **Reproduces any array**

Optimised for use with DPA microphones, the array accommodates all microphone holders. In the Decca Tree configuration, all three microphones can be spaced 60-210 cm (2-7 ft) apart, either 'on-line', in a vintage Decca school T-shape, or in an equilateral triangle configuration for optimal balance with a centered fixation point.

Designing surround arrays is where the modularity of the S5 really shines. Commonly accepted arrays like spaced omnis and Decca Tree with omnis in front and backwards faced cardioids as rear mics are obvious.

Also, arrays like OCT2, Hamasaki Square, Fukada Tree, and the DPA specialty WCSA (Wide Cardioid Surround Array) are possible with the S5.

Articles on Surround Solutions

The DPA Microphone University offers a number of articles on successful and commonly used surround techniques. Visit Mic Uni online **www.dpamicrophones.com/micuni.**

DPA Miniature Microphones for Speech and Close-Miking Instrument Applications

Originally designed for use with wireless systems in theatre, television, and close-miking instrument applications, the capsule of Miniature Microphones is smaller than a

pencil eraser. They have a neutral character with great detail and resolution, and a rounded present sound with a highly natural response.

Manufactured to exacting standards, the rugged and reliable miniature range is tailored to handle heat, humidity, and sweat, as well as wind and popping. DPA miniature mics are undetectable on stage, and a Miniature Microphone Headband is easily adjusted to fit any head and stay there.

With its elegant design and excellent performance, the Boundary Layer Microphone is ideal for use in boardrooms, conference facilities, courtrooms, teleconferencing, and other applications where excellent vocal pickup is required.

A broad range of connection adapters is offered as optional accessories for most professional wireless systems.

DPA Standards for the Highest Resolution

DPA's audio philosophy is based on the notion of zero sound colouration, and the complete and honest accuracy of these microphones is unequalled.

DPA Standard Microphones are high quality studio microphones comprised of omnis, cardioids, and wide cardioids. There is no comparison to the complete and honest accuracy of these microphones. They deliver a faithful reproduction of the original sound with components carefully selected to provide optimal neutrality, accuracy, and low distortion.

Also included in the DPA Standard Family are Large Diaphragm Microphones; top-of-the-range one-inch capsule omni microphones. With their transparency and neutral character, DPA's large diaphragm microphones are ideal for use with vocals, strings, or other acoustic instruments with a high dynamic range.

DPA Compacts – The Choice of Musicians for Maximum Clarity

DPA Compact Microphones are the smaller cousins of the standard microphones and are also available as omni, cardioid, and wide cardioid models. Specifically designed to satisfy the demands of professionals, the Compacts offer ingenious mounting solutions as well as sonic excellence.

They are especially valuable for low profile use together with DPA's elegantly designed stands, for the close-miking of instruments, as table and podium mics, and as reinforcement mics in live performance venues.

Use a carefully matched Compact Stereo Kit for ORTF and XY stereo setups, or place individual mics in DPA's elegant Flamingo series of floor and table stands. Our Compact Cardioids use the same capsule as the extremely popular 4011, but are pre-amplified using a built-in miniaturised thick-film mounted FET amplifier. The result combines the trademark DPA sound with aesthetic and functional design solutions.

Surround Matched Microphone Kits – the Perfect Match to D3/S5

Good surround sound requires exceptional microphones with a neutral character and authentic reproduction without colouration. They should furthermore have a large dynamic and frequency range to be able to offer full benefit from high resolution digital formats.

The homogeneity and precise matching accuracy of more than two microphones are of utmost importance when recording acoustic surround; it is the defining factor between an average production and a true masterpiece. These Surround Matched Mic Kits will not let you down:

5006, 4006-TL Surround Kit
Intended for use in spaced omni configurations

5006-11, 4006-TL/4011-TL Surround Kit
Intended for use in Decca Tree front/ backwards faced cardioids rear configuration

5015, 4015-TL Surround Kit
Intended for use in WCSA, Wide Cardioid Surround Array

About DPA Microphones

Drawing on more than five decades of world-class microphone design experience, DPA Microphones has manufactured microphones in its own name since 1998. The company employs well over 100 people and is represented by professional audio distributors and dealers in more than 40 countries around the world. All DPA microphones and components are manufactured at the company's purpose-built factory in the north of Denmark.

DPA MICROPHONES

DPA MICROPHONES

Headquarters
DPA Microphones A/S, Gydevang 42-44,
DK-3450 Alleroed, Denmark
t +45 4814 2828
f +45 4814 2700
e info@dpamicrophones.com
w www.dpamicrophones.com

United States
DPA Microphones, Inc., 2432 N. Main St.,
Suite 200, Longmont, CO 80501, USA
t +1 303 485 1025
f +1 303 485 6470
e Info-usa@dpamicrophones.com
w www.dpamicrophones.com

The Sound Of Emotion: Horch

Horch was established in the 1990s by a small team of dedicated audio experts, whose vision was to create a microphone able to convey emotion through sound. All Horchs are large-diaphragm tube microphones.

How Everything Started

The founder of Horch, Gibbs Platen is very familiar with the world of audio. His recording studio Zuckerfabrik was famous for American Jazz and Rock productions, and acoustic bands such as Colosseum, Wolfgang Dauner, John Scofield, Alphonse Mouzon, The United Jazz + Rock Ensemble, etc. He also freelanced for TV and broadcast productions.

Gibbs Platen, founder of Horch Audio.

During this time, Platen became familiar with a wide variety of microphones, but his all time favourite for vocal recordings was the Neumann M49 tube microphone. However, Platen felt that of these old microphones had lost some of their expected excellence by this time. Here, Horch Audio's story begins.

The Microphones

In the early nineties, Gibbs Platen and two friends founded Horch Audio with the ambition to build a microphone in the same vein as the M49, but improved. That's where the Horch RM2 came to life. In the beginning, the RM2 was built using original parts from Neumann. As a finishing touch, Platen placed a 0.5-carat brilliant diamond into the front of the RM2, which was illuminated from the inside. Later on, Horch modified the RM2 into the RM2J, with the intention to move the sound more in direction of the U47. The triode was replaced by a pentode, and a new developed capsule and transformer were built in. The RM3 was released, harking back to the sound of the old ELA M251 and especially designed for female vocals and instruments. The RM4, recalling the U47 sound, launched in 2007/2008. It displayed a whole new concept – adjustable compression, and saturation of the microphone.

Horch's Vision

The idea behind Horch's vision is to build microphones with outstanding quality for a new listening experience. That is why everything in a Horch microphone is handmade in Germany. A lot of effort is spent on research and listening, mechanical fine-tuning, and keeping in contact with customers and artists.

The company is situated in the German high-tech region of Stuttgart (Mercedes, Porsche), which promotes high standards for mechanical and electrical quality.

Each Horch is a precious sound tool, that looks great and sounds unique.

RM2J
The Horch RM2J was inspired by the Neumann M49/U47. Every electrical and optical detail is fine-tuned to provide optimal performance. The RM2J works in two different operating modes.
In the first mode, it works as a microphone with an adjustable polar pattern – the capsule illuminates blue.
In the second mode, the RM2J is a broad cardioid microphone, with a special vocal boost. This mode delivers a unique fat and rich vocal sound, and the capsule illuminates red.

RM2J

RM4
The RM4 has a unique feature, that gives you a lot of control over the sound of the microphone: the saturation of the tube is adjustable from a very clear to a high saturated and compressed sound. The RM4 is well suited for punchy and fat lead vocals. It combines the sound of the U47 era with the unique Horch quality.

RM4

RM3
The Horch RM3 is inspired by the ELA M251. It comes with an integrated shock mount and pop filter. The RM3 delivers a very crisp and transparent sound independent from the sound level. It is well suited for female lead vocals and instruments.

RM3

HORCH AUDIO
International distribution by:
Analog Audio GmbH
Liegnitzer Str. 13
D-82143 Groebenzell
Germany
t +49 (0) 8142 53980
e sales@analogonline.de
w www.analogonline.de

MicW – Precision Solutions

MicW Audio is a precision microphone manufacturer of metal-type professional microphones for recording, broadcasting, and live music. Its N-series high quality condenser microphones are based on nickel diaphragm technology. From the subtlest sound of a piano, to the high intensity of a full brass section, the MicW microphones present spectacularly pure and uncoloured sound.

Company Profile

MicW was founded in Beijing in 1989 by five well-educated acousticians with the ambition to create world-class microphones. The company's early business was focused on manufacturing measurement microphones for OEM market. Rich experiences in measurement microphones enabled the company to enter the professional microphone market with its own brand technology and manufacturing facilities.

Production and Quality

The 2,000m² MicW production facility is located in Beijing, China. The facility comprises manufacturing areas, test laboratories, environmental chambers, a full anechoic chamber, and a clean room. All microphones are handcrafted and individually tested. The MicW is committed to total quality management, ensuring that every product meets strict standards in performance. The MicW production facility has been awarded an ISO9001 Certificate by TÜV.

Research and Development

As a technology-leading company, MicW invests heavily in product research and development. Engineers were recruited with a specific knowledge domain and skill-set, 80% of them with M.S. and Ph.D. degrees in Audio Engineering, Acoustics, and related sciences. This results in not only an incredibly knowledgeable team of developers and technicians, but also a team that is dynamic, innovative, highly motivated, and capable to develop and manufacture high quality products.

Products

N-Series – Precision Recording Microphones

The N-series precision recording microphones are based on the nickel

diaphragm technology in all metal structures. The microphones transport spectacularly pure and uncoloured sound from the subtlest nuances of a solo violin, to the thunderous intensity of a full brass section or drum kit.

The N-series has five models ranging from large diaphragm cardioid to 1/4" omni microphones, which cover the application from vocals, grand pianos, instruments, and drum kits. The modern-styled N-series microphones are carefully designed to look as beautiful as they sound.

The N-series microphones leverage MicW's research and development into nickel diaphragm technology. The nickel diaphragm is precisely stretched to give the full frequency range of response; some models can be up to 70kHz. A thin layer of polymer is then coated on the diaphragm to give a subtle touch of the performance.

E-Series – Performance vs. Cost

The MicW E-series microphones are developed for general recording purposes, with a high ratio of performance:cost. The E-series microphones have similar mechanical structures to the N-series microphones, but use a different material. The diaphragms of the E-Series are made from polymer and coated with gold or nickel. Innovative designs give E-series microphones similar accuracy and performance to the N-series microphones, but at lower costs. E-series microphones

E-Series

G-Series

are a good choice for customers looking for high value microphones with high performance.

There are three models of E-series microphones, ranging from shotgun, to 1/2'' and 1/4'' microphones, and with polar patterns from super-cardioid to omni-directional.

G-Series – Golden Diaphragm Microphone

The MicW G-Series Golden Diaphragm Microphone is an omni-directional microphone that uses a 26mm diameter large diaphragm capsule. It uses a gold-plated polymer diaphragm, the tension of which is carefully adjusted during the manufacturing process to ensure a frequency response from 10Hz to 20kHz, with a 4-6dB soft boost around 8kHz. The G-Series offers a totally transparent audio path with an exceptionally low noise floor of maximum 12 dB(A).

Microphone Pair

MicW also provides microphone pairs, which are state-of-the-art stereo kits featuring two matched microphones. Each pair is guaranteed to a sensitivity match within 0.5dB, and phase match within 5 degrees up to 5000Hz.

Highlights of MicW Audio

- **Precision microphone manufacturer based in Beijing with ten years of experience**
- **Condenser capsules with nickel diaphrams**
- **High quality products with a 5 year warranty**

Microphone Pair

MICW AUDIO
Unit 1003, North Ring Center
No.18 Yumin Road, Xicheng District
Beijing 100029, China
t +86 10 51285118
f +86 10 82251626
e sales@mic-w.com
w www.mic-w.com

Sennheiser – The Audio Specialists

For more than sixty years, the name Sennheiser has been synonymous with state-of-the-art microphone solutions. Bands, artists, live sound engineers, recording engineers and amateurs, broadcast professionals and film crews worldwide rely on Sennheiser microphones.

History

Laboratorium Wennebostel

Sennheiser was founded in the summer of 1945 as 'Laboratorium Wennebostel' or 'Labor W' (Lab W) for short, named after the tiny village of Wennebostel. Founder Prof. Dr. Fritz Sennheiser was the deputy head of the Institute for Radio Frequency Engineering and Electroacoustics at Hanover Technical University. Together with seven institute members, he turned the relocated university lab into a small company and started manufacturing measuring devices. Just two years later, the engineers unveiled their very first microphone design, the MD 2 – and were soon to become experts in many fields of audio recording and reproduction. Early product highlights included amplifiers, microphone transformers, magnetic miniature headphone capsules, and microphones such as the MD 3 'invisible' mic (1949), the MD 82 shotgun microphone (1956), and Sennheiser's first wireless microphone (1957), which opened up a field in which the company was to excel in the future. In 1958, Lab W was renamed 'Sennheiser electronic', as the company had long since ceased being just a small laboratory.

Sennheiser electronic

Innovations continued under the Sennheiser brand name. The company developed condenser microphones that operated according to the RF principle, and the first professional condenser clip-on microphone, the MK 12. The world's first open headphones were developed at Sennheiser (1968), pre-polarised condenser microphones were added to the portfolio, and the company led the innovation for infrared sound transmission in the seventies. The launch of the RF wireless classic SKM 4031-TV in 1982 laid the foundation for the success of Sennheiser wireless systems in the following years, and was soon followed by the development of the first directional clip-on microphone and the smallest studio condenser clip-on mic at the time. 1993 saw the launch of another wireless classic, the SKM 5000. In 1987, Sennheiser was awarded the Scientific and Engineering Award for the MKH 816 shotgun microphone, followed in 1996 by an Emmy Award for pioneering developments in RF wireless technology. In 1998, the evolution microphone series was launched. evolution wireless, Sennheiser's most successful RF wireless series to date, has taken over the stages of the world since 1999. In 2000, Sennheiser introduced the MKH 800, the first studio microphone to fully utilise the wider frequency range of the new digital audio formats. 2002 saw the glamorous combination of two industry standards, the SKM 5000 N with a Neumann capsule. In 2007, Sennheiser launched its new MKH 8000 Series. 2009 saw the launch of the 2000 Series and of the third generation of evolution wireless systems.

From 1988, the company had begun founding its own sales subsidiaries to further increase proximity to its customers. Today, the Sennheiser sales network is comprised of subsidiaries in France, Great Britain, Belgium, the Netherlands, Germany, Denmark (Nordic), Russia, Hong Kong, India, Singapore, Japan, China, Canada, Mexico and the USA, as well as long-term trading partners in many other countries. The Sennheiser Group employs about 2,000 people around the globe, and has manufacturing plants in Germany, Ireland, and the USA.

Company founder Prof. Dr. Fritz Sennheiser and his son Prof. Dr. Jörg Sennheiser, Chairman of the Supervisory Board.
(PHOTO: PETRA SCHRAMBÖHMER)

The Microphone Portfolio

evolution Microphones

The evolution series of microphones was created to provide a complete microphone set-up for vocals and the entire backline. Designed according to the needs of singers and musicians, the evolution line comprises evolution 600 Series instrument microphones, evolution 800 Series vocal microphones, and the top-of-the-range 900 Series with such acclaimed models as the e 935 dynamic vocal mic and the e 965 large-diaphragm, true condenser microphone.

The MD Range of Dynamic Microphones

Sennheiser's rugged dynamic microphones include such all-time classics as the MD 21 (in the portfolio since 1953), MD 421 (since 1960), and MD 441 (since 1971), but also reporters' microphones like the MD 42 and MD 46. All of these models are extremely rugged and easy to use.

The MKE/ME Range of Permanently Polarised Condenser Microphones...

...contains everything from professional sub-miniature clip-on microphones for use with Sennheiser's world-renowned RF wireless technology to headset microphones and small camcorder microphones. Examples include the legendary MKE 2, the award-winning HSP 2 and HSP 4 headset microphones, and the MKE 400 camcorder microphone. With the K6 Series, the user can tailor the microphone to the recording situation by adding ME microphone heads of varying directivity (from omni to shotgun) to the basic power module.

MKH Microphones

The choice for recording, broadcast, and filming specialists, Sennheiser's MKH microphones are a sophisticated class of condenser microphones. They operate according to the RF principle and use a unique symmetrical push-pull transducer. The result of this balanced design is an unchanging acoustic impedance, extremely low distortion figures, a higher capsule output with much lower noise, and thus a very clear signal. Moreover, these microphones are uniquely insensitive to unfavourable climatic conditions, have a wide dynamic range and an excellent low frequency response even with small capsules. A further benefit of RF condenser microphones is that, although the capsule is grounded, they possess a genuine fully floating, balanced output without the need to use a transformer. The latest models in this line are the MKH 8020 (omni), MKH 8040 (cardioid), and MKH 8050 (super-cardioid).

Wireless Microphone Systems

Sennheiser enjoys an excellent reputation in the field of large multi-channel RF wireless systems. Thanks to the exacting specifications and outstanding RF properties of Sennheiser's wireless technology, users were able to create systems with more than 140 microphone channels operating simultaneously. The top-of-the-range 3000 and 5000 Series include such industry standards as the SKM 5200 handheld transmitter, SK 5212 bodypack transmitter, and the EM 3732 twin receiver. A new entry series for Sennheiser's professional segment, the 2000 Series, offers Sennheiser's renowned audio and RF quality at a very attractive price point.

For more than one million users worldwide, the evolution wireless Series is their no.1 choice for stage and live use. Whether wireless instrument mics or acclaimed vocal models – this series contains wireless solutions for almost every application. In April 2009, Sennheiser launched the third generation of its most successful wireless series, with a whole range of exciting extras to offer up-and-coming bands, established performers, presenters, musicians, reporting teams, and PA companies outstanding quality at attractive evolution prices.

Digital Microphones...

...are the youngest members in the Sennheiser microphone family. A digital module, the MZD 8000 (available from summer 2009), turns the renowned MKH 8000 series into digital microphones. Perfectly matched to the MKH microphone heads, the module directly 'translates' the clear, warm, and responsive sound of the microphones into the digital world, avoiding the losses or signal disruptions to which cables are prone. The microphones can be remotely controlled, allowing parameter settings such as the low-cut filter and attenuation to be adjusted via an AES 42 interface and a PC.

From the past – the MD 2...

...to the present – the SKM 5200 with MD 5235 microphone head.

SENNHEISER

SENNHEISER
Sennheiser electronic GmbH & Co. KG
Am Labor 1
30900 Wedemark
Germany

t +49 (0) 5130 6000
f +49 (0) 5130 600 300
e info@sennheiser.com
w www.sennheiser.com

A complete list of Sennheiser subsidiaries and partners around the globe can be found at **www.sennheiser.com.**

Legendary Performance

Superior sound and solid reliability have made our microphones the industry standard for decades. Shure microphones deliver consistent vocal and instrument reproduction in any performance or recording setting, which is why they are legendary.

Shure microphones for performance and recording are designed for artists and engineers at all levels. Whether you're at the top of the charts or on your way there, choosing from any of these Shure product lines puts you in good company.

KSM

Shure KSM microphones balance exceptional performance and flexibility with a level of reliability and consistency not typically found in ultra-premium microphones. Finely tuned condenser cartridges give voice to each of these seven elegant models, with high sensitivity to accurately capture the widest variety of sound sources.

The KSM9 brings studio sound quality to live performances

Their very low self-noise makes them ideal for use with digital mixing and recording equipment.

On some models, switchable polar patterns allow the configuration to be instantly changed to suit the characteristics of a particular voice, instrument, or miking technique.

The KSM9 unites the best of studio and stage. With its dual diaphragm design and switchable polar patterns, the KSM9 reveals nuance and subtlety normally heard only in a studio microphone. Yet its solid build quality delivers traditional Shure dependability that allows it to be used in the most demanding live environments. A wireless version is also available for performances where complete mobility is required.

New introductions to the KSM range for 2009 include the KSM313 and KSM353 ribbon microphones (formerly known as Crowley and Tripp's Naked Eye and El Diablo respectively).

Beta

Shure Beta microphones are designed specifically for use in live performance applications. They feature carefully tailored supercardioid polar patterns with a remarkable absence of off-axis colouration, for use when high sound levels onstage require maximum isolation without sacrificing sound quality. Handheld vocal, miniature instrument-mount, and low-profile head worn models are available, as well as dynamic and condenser kick drum models.

The popular Beta87 vocal microphone is also available in a cardioid version, which provides additional ambience for users of in-ear monitors.

SM57 and SM58 – standard equipment on stages worldwide

SM

Legendary SM microphones have come to define the sound of live performance. Recognisable by name and reputation, SM microphones are virtually indestructible professional gear, built to take the punishment of night-after-night touring. Durable and reliable, SM microphones deliver consistent vocal and instrument reproduction in any performance setting.

The SM58 and SM57 – the #1 and #2 bestselling microphones worldwide for decades – possess a consistency and familiarity that takes some of the guesswork out of setting up an unfamiliar sound system in an unfamiliar venue.

SM microphones make every performer sound good.

Performance Gear

Performance Gear microphones are designed for the entry-level performer. They include a complete set of vocal, instrument and drum microphones. Ideal for everyday use and practice, they share many of the performance and construction details of other legendary Shure microphones. Performance Gear microphones come complete with cables and accessories, so they easily fit into the beginner's budget. New models in this range include the PG27 multi-purpose microphone, and the PG42 vocal microphone (both available in USB and XLR versions).

Shure wireless microphone systems deliver the freedom and convenience of wireless, while matching the legendary sound quality of our wired microphones. All Shure wireless systems are available in both handheld and bodypack styles, with a wide choice of handheld, lavalier, and headworn microphones. Receivers range from simple to elaborate, and a full selection of accessories and other tools are available to complete any installation.

X2U

The X2U is Shure's new XLR to USB signal adaptor allowing users to convert their favourite wired microphones into USB.

UHF-R

Shure UHF-R Wireless Microphone Systems deliver uncompromising Shure sound, and are the premium choice for the most demanding music, theatre, and broadcast applications. Up to 108 systems can be used

in one location (country-dependent), and the entire system can be networked together via USB or Ethernet connections. Internal Flash memory stores six 60-channel custom editable frequency groups, which can instantly be recalled and loaded across all receivers on the network. The all-metal handheld and bodypack transmitters have switchable RF output power and a backlit LCD display. Shure's breakthrough Audio Reference Companding delivers crystal-clear sound that matches a hard-wired microphone. Shure Wireless Workbench software makes it easy to configure, monitor, and control every unit using your PC, from transmitter and receiver settings to battery status.

ULX

Shure ULX wireless systems deliver outstanding performance for working musicians and professional sound system installers. Up to 40 systems can be used in one location (country-dependent), making ULX an excellent choice for larger performing groups, meeting facilities, and houses of worship. Shure Predictive Diversity constantly monitors RF signal strength and silently switches antennas when it appears likely that a dropout will occur. Automatic Frequency Selection makes it easy to find an open frequency, lockable frequency and volume adjustments prevent tampering once the system has been set; ½-wave antennas that can be remote-mounted are standard equipment; and the receiver provides in-line power for antenna amplifiers.

SLX

Shure SLX wireless systems are designed for working bands and sound system installers. Useful features like Automatic Frequency Selection and Infrared Auto Transmitter Setup make setup quick and easy, and Shure's patented Audio Reference Companding delivers sound that matches a wired microphone. Up to 20 systems can be used in one location (country-dependent).

PGX

Shure PGX wireless systems are designed for performers who are in charge of their own sound. Automatic Frequency Selection and Infrared Auto Transmitter Setup ensure quick and easy setup, while microprocessor-controlled diversity and Audio Reference Companding deliver great sound and reliable performance. PGX systems are available with the most popular Shure handheld, lavalier, headworn, and instrument microphones, providing a stage-ready option for almost any application. Up to 12 systems can be used in one location (country-dependent).

Shure History

Founded in 1925, Shure has consistently produced innovative products that have become industry benchmarks. Here are just a few of the many Shure milestones:

The first directional microphone: The model 55 Unidyne, introduced in 1939, was the first directional microphone, meaning that it was able to reject sounds from the sides and rear. The Unidyne greatly improved the sound quality of public address systems. The unique styling of the 55 series – also known as "the Elvis mic" – has been featured in countless videos, movies, and ads.

The first wireless microphone: The Vagabond 88, introduced in 1953, was the first wireless microphone system for performers. The radio signal from the microphone was picked up by an antenna wire along the perimeter of the stage, which connected to a receiver.

Model 55SH Series II has been featured in movies and advertisements for decades

The first stereo phonograph cartridge: Introduced in 1958, the M3D brought high-fidelity into the home, at a time when millions of people were discovering stereophonic sound.

The first portable P.A. system: The Vocal Master, introduced in 1958, was the first product to combine a mixer, equaliser, and amplifier, in one portable unit, greatly simplifying P.A. system setup and operation.

Shure Incorporated corporate headquarters is located in Niles, Illinois, in the United States. The Company has additional manufacturing facilities and regional sales offices in China, Germany, Hong Kong, Japan, Mexico, The United Kingdom, and The United States.

SHURE

United Kingdom
Shure Distribution UK
Unit 2,The I.O Centre
Lea Road, Waltham Abbey
EN9 1AS, UK
t 01992 703058
f 01992 703057
e info@shuredistribution.co.uk

USA, Canada, Latin America, Caribbean
Shure Incorporated
5800 West Touhy Avenue
Niles, IL 60714-4608 USA
t +1(847) 600-2000
t (U.S. only) +1(800) 25-SHURE
f +1(847) 600-1212
e (US): info@shure.com
e (Canada/Latin America/Caribbean): international@shure.com

Europe, Middle East, and Africa
Shure Europe GmbH
Wannenacker Str. 28 74078
Heilbronn Germany
t 49-7131-72140
f 49-7131-721414
e info@shure.de

Asia
Shure Asia Limited
301, Citicorp Centre
18, Whitfield Road,
Causeway Bay, Hong Kong
t (+852) 2893-4290
f (+852) 2893-4055
e info@shure.com.hk

Surround Recording From A Single Microphone

What other microphone systems can produce simultaneous mono, stereo, M/S and surround from a single mic? With their surround-ready mic technology, it's easy to see why SoundField systems are the products of choice for many HD broadcasters working in surround...

All over the world, TV companies are gearing up for the move from Standard Definition (SD) to High Definition (HD) broadcasting, for which 5.1 surround is the main required audio standard. As a result, the number of broadcasters that require a quick and easy method of capturing audio in 5.1 whilst maintaining compatibility for stereo SD transmissions is increasing fast. Using SoundField technology there's no need for costly multi-microphone arrays, spaced-capsule 'dummy heads' or complex recording techniques – and unlike that from spaced arrays, the multi-channel audio that SoundField generates is completely phase-coherent.

SoundField Digital

Since 2006, when its DSF-2 digital microphone systems were first released to the broadcast market, UK manufacturer SoundField has steadily become accepted amongst big-name European broadcasters as offering the tried-and-tested method of delivering broadcast-quality 5.1 surround sound – high-profile users now include European satellite broadcaster Sky and UEFA's exclusive media partner TEAM AG. This was exactly what the DSF-2 was designed for: its all-digital design offers a high-quality, accurate signal path, and the microphone can be used to generate stereo and surround audio for simultaneous SD and HD transmissions at up to 300 metres from its associated processor. The processor, in turn, can be situated up to a kilometre from the associated OB vehicle, providing a reliable operating distance of up to 1.3 kilometres from the microphone head. This offers a further unique advantage in outside broadcast situations where the remote vehicle is situated a long way from the action being filmed.

The SoundField DSF-2 in use capturing the ambience on Centre Court for a BBC HD broadcast during the 2008 Wimbledon Tennis Championships.

The 1U-rack DSF-2 controller unit offers live decoding to stereo, M/S, and SoundField B-Format (which can be further decoded into any existing or future multi-channel audio format if required). The stereo signal may be output directly from the DSF-2 in the analogue or digital domain via rear-panel XLRs or AES/75Ω BNC connectors respectively, while the M/S and B-Format signals are output digitally. From here, the digital B-Format signals may be decoded to 5.1 surround by SoundField's DSF-3 Digital Surround Processor, or by the company's Surround Zone decoding software plug-in, available for use with Pro Tools, SADiE, and all DAWs that support the VST multi-channel standard, such as Nuendo, Cubase, Sequoia, and Pyramix, on both PC and Mac platforms. Digital output is possible at 48, 96, and 192kHz for the best possible audio quality.

In its first year, the DSF-2 was used to originate simultaneous stereo and 5.1 ambience from the soccer World Cup in Germany, satellite broadcaster Sky subsequently began using DSF-2 systems on the majority of their live HD sports broadcasts, including international golf, rugby, cricket, and darts, and in 2008 a DSF-2 was used during the BBC's HD coverage of Wimbledon for the first time. Now it has begun to see use outside the realms of sport; 2009 has seen a DSF-2 being used on ITV's *The X-Factor*, and to capture the reactions of the live audience in 5.1 during Harry Hill's BAFTA-winning *TV Burp*.

SoundField Portable

The company's most affordable products are also their most portable. Like all SoundField systems, the ST350 generates SoundField B-Format and consists of a multi-capsule microphone and an associated processor unit. However, in this system, the mic is about half the size and weight of other SoundField mics, and the decoder/processor can be powered from the mains or batteries. This makes the ST350 ideal for use in the field: Sound Designer Wayne Pashley (pictured above right) recently made it his mic of choice whilst travelling around the far reaches of the outback capturing Australian 'ambiences' in 5.1 for Baz Luhrmann's film Australia, starring Nicole Kidman and Hugh

Sound Designer Wayne Pashley at work in the Australian outback with the ST350.

Jackman. Other film users include John Casali, Second Unit Sound Mixer on Harry Potter And The Half-Blood Prince, who used the ST350 to capture the magic of the Great Hall of Hogwarts in 5.1 surround.

The small, lightweight SPS200 is the first SoundField microphone that doesn't require a hardware decoder, and can be used with any four-channel mic pre with 48V. Stereo and surround decoding for the SPS200 is performed by using the included SPS200 Surround Zone software. To complement the SPS200, SoundField has recently introduced the SMP200 gain-matched mic preamp. The SMP200 differs from other multi-channel preamps by offering a ganged master gain control, 48V phantom power, and a low-pass filter that can be applied simultaneously across all four channels, thus ensuring the outputs from the SPS200's capsules remain perfectly matched.

More Information

SoundField systems are used daily by many international broadcasters, including Sky, France 3, the BBC (UK), RAI (Italy), NBC (USA), SR (Sweden), YLE (Finland), WIGE (Germany), and Topvision (Germany).

If you need to provide surround-sound audio for broadcast and would like to discuss your requirements, you can contact SoundField via the details below.

The entry-level SoundField mic, the lightweight SPS200 is used in conjunction with its included SPS200 Surround Zone software. The mic can be used with any preamp, but SoundField's four-channel SMP200 gain-matched mic pre complements it perfectly.

Products

Digital:

- DSF-1 – A fully digital SoundField system utilising similar technology to the DSF-2, but adapted for high-end music and concert hall recording applications.
- DSF-2 – A digital microphone system designed specifically for broadcast.
- DSF-3 – A 19-inch 1U B-Format-to-5.1 digital decoder, designed for use with the DSF-1 and DSF-2.
- UPM-1 – A 19-inch 1U stereo to 5.1 converter (see box for more details).

Software:

- Surround Zone – Stereo/surround post-production software.

Analogue:

- MKV – SoundField's top-of-the-range analogue system.
- SPS422B – Professional microphone system with 1U control processor.
- SP451 – A 19-inch 1U B-Format-to-5.1 analogue decoder.

Portable:

- ST350 – Battery-powered SoundField microphone system.
- SPS200 – Portable, lightweight standalone microphone with included SPS200 Surround Zone software.
- SMP200 – A four-channel 'gain-matched' mic preamp designed for use with the SPS200.

SoundField's UPM-1 Stereo to 5.1 Converter

The UPM-1 offers a simple upmix solution for creating natural-sounding 5.1 surround from a stereo signal. Although HD broadcasts are increasingly produced in 5.1 surround, stereo remains a widely used production format, presenting a challenge to broadcasters wishing to transmit consistent 5.1 audio.

Software and hardware upmixing tools have existed for some time, but most of these devices employ effects such as reverb and phase-shifts to create the extra channels required for 5.1. Instead, the UPM-1 uses a unique algorithm to perform detailed real-time analysis of the stereo source material, identifying and separating the ambience from the direct sound. Mono sources (dialogue, commentary, etc) are extracted from the stereo signal and fed to the centre channel and a good frontal stereo image is maintained by keeping the direct sound sources at the front. The UPM-1 then feeds the extracted natural ambience to the rear surround channels.

Released only recently, the UPM-1 has received favourable feedback from international broadcaster Sky and also further afield in Germany, Scandinavia, Canada, and the USA through the SoundField international distributor network.

SOUNDFIELD

SOUNDFIELD LTD.
Charlotte Street Business Centre
Wakefield, West Yorkshire, WF1 1UH
United Kingdom
t +44 (0) 1924 201089
e info@soundfield.com
w www.soundfield.com

USA — TransAudio Group
w www.transaudiogroup.com
Germany — SEA Vertrieb
w www.sea-vertrieb.de
France — SAV
w www.sav.tv

Studio Projects

Southern California Microphone Company Aims High But Keeps Their Costs Low

In 1997, PMI Audio Group founder Alan Hyatt was beginning to see some success from producing Joemeek's JM47 condenser microphone. However, Hyatt ultimately wanted to produce a full line of microphones. When Joemeek chose a different direction by furthering their signal processing line, Hyatt decided to strike on his own once again to form Studio Projects, a company that quickly earned a reputation for producing sturdy, robust-sounding microphones, preamps, and accessories at a price that even the average 'Joe' can afford.

To cut costs without sacrificing quality, Hyatt partnered with Beijing 797 Audio Co. Ltd, one of the largest and most respected manufacturers in Asia. 797 Audio has one of the largest anechoic chambers on the planet, as well as B&K electro-acoustic testing equipment and digital DASS testing systems. In other words, they have high standards. In addition, PMI Audio Group does its own design, service and modifications in-house utilising the latest equipment. "It was 797's history that gave us the confidence to build with them," says Justin Hyatt, who oversees PMI Audio's U.S. operations in Gardena, Calif. "The company was founded in 1952 by a group of highly experienced German microphone engineers. They have been the premiere audio electronics manufacturer in China ever since."

Studio Projects C1

The Studio Projects C1 is a large diaphragm, fixed-cardioid condenser microphone

- Pressure-Gradient Transducer: 1.06" (27mm) 6um mylar diaphragm
- High Pass Filter, 6dB/octave@ 75Hz or 150Hz
- -10db or -20dB Pad
- Comes with Halo Shockmount, Foam wind screen, and case

The C1, C3 and T3

With their partnership firmly intact and openly discussed, Studio Projects targeted the home and project studio market with the C1, C3, and T3 microphones. Even skeptics soon embraced the company's large diaphragm condenser mics, and word quickly spread via Internet forums and media sources about the company's excellent products and amazingly good deals.

By launching Studio Projects with an affordable line of microphone, the company could tap into the burgeoning home and project studio market; which, in the mid- to late 1990s, flourished as more studio professionals adopted computer and DAW-based recording. "This was the arena where we could most effectively compete, and it helped us build our brand awareness rather quickly, too," says Justin Hyatt.

Studio Projects continued to build name recognition with their C and B Series mics, and drew attention with the budget LSD2, a stereo large-diaphragm condenser mic that essentially consists of two C3 mic capsules contained within a single housing. While Studio Projects' reputation grew in the mid-level studio market, they kept one eye fixed on their long-term goal: to corner the high-end market. In 2007, they broke ground in this arena with the recently launched CS Series, which consists of the all-purpose CS1 cardioid mic and the CS5 transducer microphone. The CS Series features an all-new design from Studio Projects Director of Engineering Brent Casey that's hand designed "from the capsule all the way down to the XLR," says Justin Hyatt. "We're already building a strong momentum with many commercial recording studios in the L.A. area. The line is still new and largely unheard of, but we expect great things from CS."

With three lines of microphones to their credit, moving into preamp design seemed like a logical next step. They took that route with the VTB-1 and SP828 microphone preamps, both designed by Studio Projects and both boasting affordable, yet high-quality technology. The VTB1 is a solid-state preamp using a totally discrete circuit, but also offers a 'Tube Drive', feature, which is a variable drive to a 12AX7 that allows the user to blend as little, or as much of, the Tube Drive they want. "The VTB1 has really gained a lot of ground because it's a very affordable pre, but also very good quality," says Justin Hyatt. "It doesn't use any chips. It's a Class-A/B design, and

very transparent sound."

The VTB1 continues to be extremely popular, especially at its $150 price category."

Low Cost Without Cutting The Quality

Studio Projects can keep their overhead low mainly because they build in China. But their alignment with the highly reputed 797 Audio keeps the quality above board. "We are straightforward about where we build, and we have been since we introduced Studio Projects," says Justin Hyatt. "We have such a great relationship with 797 that we wanted to promote them in the beginning and make them proud to produce our microphones. We did this by putting the 797 Audio logo directly on the front of the microphone models. This was only recently removed when we released our CS Series, which has a sleeker look with no writing. All of this translates to 797 giving us microphones produced to our standards and at a price that allows us to be very competitive."

Another element that gives them an edge is the work of designer Casey, the creative mastermind behind Studio Projects. "He's been with us since the beginning," says Justin Hyatt. "Brent has put many years into our designs." The C Series capsules are based on a 1950s Neumann design, reverse engineered and otherwise improved upon using advanced manufacturing techniques. "Brent's newest designs take further advantage of his design expertise, which can be seen in the new CS Series with his newly designed capsule," he continues.

Global Reach and Global Price Parity

Studio Projects' commitment to keeping quality high and costs low mirrors that of others under the PMI Audio umbrella, including Joemeek, Toft Audio Designs, and the upcoming Valley Audio re-introduction. Owning all of these companies, and distributing their products, allows PMI Audio to direct product development and offer what Hyatt calls "global price parity." PMI Audio currently distributes to more than 70 countries worldwide, and the prices are the same in each country, exchange rate notwithstanding. "Having a distribution network in addition to being the manufacturer has distinct advantages," said Alan Hyatt in a 2005 Audio Media interview. "We have our own facility in Torquay, England, with R&D, warehousing, shipping and repair. The U.S. office takes care of North America and the Pacific Asian countries. In countries that we can't service directly, we're set up through local distributors."

The Personal Touch

Despite its global reach, Studio Projects still retains much of the benefits of a boutique company. Working out of PMI Audio's U.S. office, Casey will oversee repairs for any mic, no matter how old, and spends ample time customizing microphones for their customers.

PMI Audio also remains a family business. Both Alan Hyatt's sons are working for the company, his oldest son, Justin Hyatt started as a part-time employee in high school, and now heads up the entire American operation.

"We do have humble beginnings that go back to 1979, when we worked out of our garage as a rep firm called AMH Sales, Inc.," says Justin Hyatt. Years of experience and a large pool of contacts allowed the company to grow into distributing and manufacturing. "Today we have our headquarters in L.A. and a sister office in Torquay, UK," he emphasises.

Where does Studio Projects grow from here? "We intend to further expand our line in both microphones and signal processors," says Justin Hyatt, "and continue to raise the quality of our brand and its products."

Halo Shockmount

The Halo is a newly designed shock mount from Studio Projects Microphones. Machined from aircraft aluminum with a plated nickel finish, the Halo is configurable for a variety of miking tasks – including stereo and multi-channel setups, when incorporated with the Studio Projects Stereo bar.

Studio Projects CS5

The Studio Projects CS5 is an externally polarised five pattern pressure gradient transducer microphone with FET impedance converter.

- Pressure-Gradient Transducer: 1.06" (27mm) 6um mylar diaphragm
- FET impedance converter
- Five Polar Patterns: Cardioid, Wide Cardioid, Hyper Cardioid, Omni, Fig. 8
- -5dB, -10dB, -15dB, and -20dB Pads
- 50hZ, 75hZ, 150Hz, and 300hZ High Pass Filters @ 6dB/octave
- 15kHz, 7kHz, 5kHz, and 3kHz, Low Pass Filters @ 6dB/octave
- Comes with Halo Shockmount, Foam wind screen, and case

Studio Projects

PMI AUDIO GROUP

t +1 877 563 6335 (USA)
f +44 (0)1803 215 111 (UK)
e sales@pmiaudio.com
w www.pmiaudio.com
w www.studioprojectsusa.com
w www.joemeek.com
w www.toftaudiodesigns.com

Violet Microphones – Ears For Your Sound

For a while only price mattered, but now, it is time to:
Get back to quality, get back to reliability,
get back to design…
Get back to what matters – get into Violet Microphones.

Violet Design – Microphones Made in Latvia

It is almost impossible to picture today's pro audio and recording industry without technological innovations and expressive designs introduced by Violet™ microphones. Microphones are made in Latvia, in the same factory that has within the last decade achieved great popularity worldwide with the quality and design of its microphones.

Violet Design was founded in 2003 by Stanislav Rubintsik. The company is a worldwide distribution centre and sales representative of Violet and Flamingo brand microphones.

The factory started to manufacture microphone capsules in late 1994. Its first capsules were placed in legendary vintage microphones: U47, M49, M50, C12, and the 414. In 1997, a new generation of capsule was born. Today you can get the same perfect, original sound and an expressive design with the Violet™ line of microphones.

The benefits of Violet Design microphones are:

- **High SPL level**
- **Very low self-noise**
- **Low distortions**
- **Wide dynamic range**
- **High output level**
- **Solid state or tube Class A discrete preamplifier**
- **An attractive design**
- **All mics are hand crafted and have 5-year warranty.**

Philosophy

Violet's main philosophy is to offer handcrafted microphones with a unique style and excellent sound quality, using innovative solutions in microphone manufacturing without losing the best details of vintage sound.

We believe that in the process of music recording, the most important things are passion and inspiration, and nothing should get in the way of these. So in our ideology of microphones, we trust in three simple points:

- It must sound good
- It must look nice
- It must be as simple as possible

A nice look gives you the possibility to grab inspiration at the time of recording. Simplicity grants the microphone a long life and durability. After having recorded, you will never be surprised by incorrect settings, as there will be a chance to change them.

And most importantly, a microphone must do its job as well as possible. To improve its microphones sonically, Violet has been investing a lot in its research laboratories.

Capsule

The heart of the microphone is its capsule – Violet's hand crafted highest quality electrostatic transducers provide high output of the best quality audio signal, and can handle extremely high SPL at the same time. Internal Class-A transformer-less discrete electronics quality is adequate, providing hard to measure noise and distortion parameters. However, Violet's microphone housing designs are primarily based on acoustic ideas.

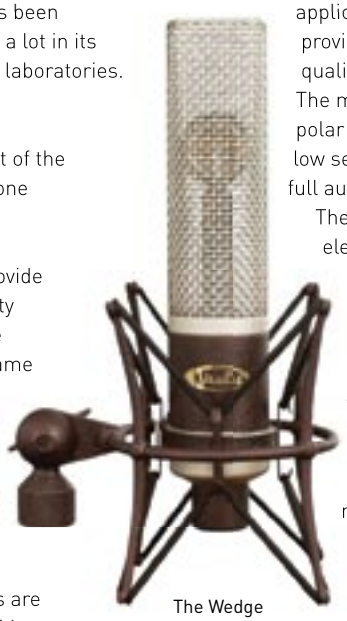
After a large number of experimental jobs in its laboratory, in September 2005 Violet announced its latest capsule diaphragm technology. We introduced the new mixed gold-aluminum composite coating material, layered diaphragm sputtering, and variable coating thickness, adding transparency, better sound communication with the membrane, and reduction of parasitic internal resonances and reflections. New technology, named 'Golden Drops', is used in all our large capsule microphones from 2008.

PRODUCTS

In 2008-2009, Violet introduced several new microphones and accessories.

The Wedge

The Wedge is designed as Violet's next generation of universal-wide application studio microphone, providing perfect audio recording quality for an affordable price. The microphone has a cardioid polar pattern, high output, very low self-noise, distortion, and a full audio spectrum of sound.



The Wedge

The newly designed VD21 true electrostatic single diaphragm capsule uses Violet's latest technologies, and is damped from vibrations and resonances. Acoustically open long double mesh head provides the highest sound transparence and naturalness.

The Wedge comes with a stand holder, but can be mounted on different optional (VSM-WD, PSM, or GSM) studio shockmounts for additional protection from external subsonic interference.

The Garnet

The Garnet is a tube microphone with a large dual diaphragm capsule. The VD47 capsule in combination with tube and custom-made

The Garnet

transformer provides a sweet, dense tone, recognised from the most famous vintage vocal microphones

The internal preamplifier is based on a class-A discrete vacuum tube circuit designed under the highest audiophile standards.

The microphone has nine selectable polar patterns from omni to cardioid, to figure of eight with nine mini switches on the front panel of the power supply unit. A soft-start PSU comes with the Garnet. An included JSM elastic shockmount protects the microphone from stand rumble, subsonic vibrations, and external shocks.

The Garnet can be used for a variety of high-end professional recording situations. It excels when capturing vocals, speech and choir, but also performs well capturing musical instruments, orchestra, and most other sound sources. The Garnet also performs well for broadcast and television studios, as well as for film and video industries.

The Garnet PSU

The Pearl Vocal

The Pearl Vocal is designed for use with today's modern improved quality P.A. systems as high-end vocal stage microphones. The microphone has a cardioid polar pattern, low handheld noise, and high output.

With a new VD21 true electrostatic single diaphragm capsule, the Pearl Vocal brings studio quality sound onto the stage.

A dual mesh head plus an internal dual mesh cone-shape pop filter effectively protects the diaphragm from plosive sounds of vocals and speech.

The microphone is ready for handheld or stand use, but can be mounted on optional external studio (PSM or GSM) shockmounts for additional protection from external subsonic interference.

An optional Reflection Ring adds warmth, reduces feedback, and protects against wrong handheld use of the microphone.

The Pearl Vocal

The Pop Filter

One of the last additions to Violet Design's accessories range is the Metal Mesh Dual Cone Pop Filter. It is composed of dual layers of fine mesh screens, standing in a holder ring with lock.

The main difference from other filters is the shape of the surfaces – they are conical. Thanks to unparallel surfaces, air-waves are 'killed' very effectively, and popping sounds are blocked. The energy of plosives is reduced, but without changing the sound: audio becomes uncoloured.

Thanks to its effectiveness the Pop Filter can be located close to microphones, making for a compact set-up.

The Pop Filter comes in two sizes – 42mm and 60mm diameter. This means the filter can work with the Black Knight, Dolly, Wedge, Globe, and all microphones with the same body diameter (U47).

The Pop Filter comes in Black, Brown and Silver colours.

The Pop filter

USERS:

Our microphones are successfully used by dozens of famous producers, recording engineers, and musicians, starting from Bruce Sugar (Elton John, Ringo Starr, Paul McCartney, Ozzy Osbourne), David Kahne (Paul McCartney, Kelly Clarkson, Sublime, Fishbone), Joe Barresi (Tool, Queens of the Stone Age, Melvins), John Paterno (Robbie Williams, Joan Osborne, Los Lobos, 'Boston Legal' TV show) to B2, a famous Russian Band.

Other

All other microphones, from the flagship Flamingo ME to the Finger, are still available. You can see them on the Violet website at **www.violet-design.com**

VIOLET DESIGN LTD.
P.O.Box 3393, Tallinn,
10506, Estonia
t (+372) 6455007
f (+372) 6466054
e info@violet-design.com
w www.violet-design.com

Violet USA
8001 Terrace Ave.,
Middleton, WI 53562
USA

Shawn McLoughlin
t +1 608 227 2040, ext 5
tf +1 608 831 1890
e shawn@fdw-w.com
w www.violetusa.com

Microphone Manufacturers Directory

ADK MICROPHONES

ADK Microphones was established in 1997 by recording engineer and vintage microphone collector, Larry Villella, to replicate the sonic attributes of vintage European microphones through spectrum analysis and computer modelling of the response curves of his favourite microphones.
A wide range of FET, transformerless and tube microphones make up the ADK range, which has just added the Vienna MKII and Hamburg MKII.
www.adkmicrophones.com

AEA MICROPHONES

Audio Engineering Associates' (AEA) Wes Dooley drew upon his 40 years of experience and passion for ribbon microphones when he reintroduced the AEA R44 (based on the RCA 44) back in 1998. Since then AEA has introduced mic preamps specifically for ribbon use alongside other ribbon microphones, including the well-regarded R84.
www.wesdooley.com

AEVOX AUDIO

Handmade in Belgium, Aevox Audio produces a range of micro/lavalier microphones and accessories for use with portable recorders, video cameras, wireless packs and computers. The range includes the IE (In Ear) stereo MKII microphones for discreet or binaural recording, power adapter, wind shield, and the Omni Classic M MKII which boasts extended frequency response and reduced handling noise.
www.aevox.be

AKG

2007 marked the 60th anniversary for AKG. Founded in Vienna in 1947 AKG has grown a great deal from five workers hand building microphones, to become one of the principal microphone manufacturers with a product range that spans all areas of professional audio, many becoming established classics. AKG microphones include the Blue Line range of modular mics; lavalier; instrument; live, recording… the list is endless.
www.akg.com

AMBIENT RECORDING

Ambient Recording was founded in 1989, and was originally a company dealing with sound equipment rentals and transfers.
It now manufactures a number of products for location recording based on the founders' considerable experience.

Ambient has a couple of microphones, the Tinymike, a mini camera mounted shotgun microphone and the Emesser bi-directional mini microphone.
www.ambientaudio.com

AMG ELECTRONICS

Sitting on the Surrey/Hampshire borders, AMG Electronics produces a number of different configurations of its C-ducer (Capacitive-Trans-Ducer) microphone.

Available in various lengths, 1mm thick, flexible and light weight, the C-ducer can be formed to all shapes of instrument surface.
www.c-ducer.com

AMT

Applied Microphone Technology has been manufacturing microphones for seventeen years, and takes the approach of producing microphones for specific instruments without compromise.
www.appliedmic.com

AUDIO LTD

Based in High Wycombe, Audio Ltd produces a number of wireless solutions for theatrical and broadcast applications. The Envoy range is designed for ENG news crews who are looking for high quality and reliability. The RMS2040 range of wireless products received a recent edition with the miniTX wireless transmitter.
www.audioltd.com

AUDIO TECHNICA

Audio Technica began back in 1962 in Tokyo's Shinjuku-Ko district manufacturing state of the art stereo phono cartridges. Now a global group, Audio Technica is involved in the manufacture of audio equipment across the whole spectrum of the industry.

Its range of microphones illustrates this diversity with cost effective solutions for semi-pro use through to high end models for applications in live, broadcast, studio, commercial and industrial.
www.audio-technica.com

AUDIX

Starting life back in 1984 in Redwood California, Audix moved to Oregon in 1991 where it established a state of the art manufacturing facility, where the quality of its microphones could be controlled from start to finish.

Audix focuses on simple, elegant designs with microphones covering applications in corporate, live, broadcast, and studio. Amongst them is the respected D-series of drum microphones.
www.audixusa.com

AVLEX

In Kansas City, USA, Avlex is about rugged cost effective solutions principally for presentation and theatre applications. Other audio applications are covered with microphone ranges with different brand names. Mipro microphones are a line of wireless systems for location and broadcast use, and Superlux microphones are for more studio specific uses.
www.avlex.com

AZDEN CORPORATION

East coast USA Azden Corporation has some 40 years of experience utilising CAD and SMT technology to create a number of standard and wireless transduction solutions. Originally an OEM manufacturer for many of the world's best known brands, the last 15 years has seen Azden raise its own brand identity, providing low cost microphone systems for event and wedding videography use.
www.azdencorp.com

BEHRINGER

Uli Behringer founded the company that takes his name back in 1989 in Germany. Since then Behringer has grown to have offices in 10 countries distributing a wide range of audio products. Behringer has a range of general purpose dynamic and condenser microphones including the B-2 Pro and stereo pair C-2.
www.behringer.com

BEIJING 797 AUDIO

Founded in 1952, Beijing 797 Audio is now a very large concern with development, manufacturing and testing facilities. It has the largest anechoic chamber in Asia and its microphone range encompasses condensers, dynamics and a wide variety of wireless and electret microphones for broadcast and presentation use.
www.797audio.com

BERLINER AUDIO

USA-based Berliner Audio introduced its first microphone, the CM33 hand-matched stereo pair in 2007 and has since followed this with four further models. The range fit a variety of recording applications.
www.berlineraudio.com

BEYERDYNAMIC

beyerdynamic has evolved into one of the better known manufacturers since its beginnings back in 1924. Developments in a number of audio areas continue, and beyerdynamic condenser, ribbon and general dynamic microphones, still form the backbone of many studios' mic collections.
www.beyerdynamic.com

BLUE MICROPHONES

Headquartered in Westlake Village in California, and with engineering and manufacturing facilities in Latvia, Blue Microphones has come a long way since 1995 when founders Skipper Wise and Martin Saulespurens put together a few hand built microphones for fellow musician friends.
Blue has some of the most distinctive looking mics for recording purposes, and through their Vintage Mic Store has further examples as well as vintage mic restoration services.
www.bluemic.com

BOCK AUDIO DESIGNS

From 1996 to 2006, former studio tech (Hit Factory, Oceanway) David Bock ran Soundelux Microphones. Concerned with producing high-end microphones for recording applications, David continues to develop his designs through southern California-based Bock Audio.
www.bockaudiodesigns.com

microphones 2009

BRAUNER MICROPHONES
Dirk Brauner was developing ideas with tube microphone circuits back in 1993 looking to create the world's best tube microphone. Initially creating a limited number of handcrafted microphones based on his VM1 design, demand led to the start of Brauner Microphones in 1995 which now boasts an impressive collection of microphones still headed up by the VM1.
www.brauner-microphones.com

CAD MICROPHONES
CAD Microphones manufactures a variety of visually distinct condenser, tube, ribbon, and instrument-specific microphones.
www.cadmics.com

CASCADE MICROPHONES
US-based Cascade microphones produces a wide variety of types, but is probably best know for it's range of ribbon microphones and the retro styling of many of its designs, including the Fat Head II.
www.cascademicrophones.com

CHAMELEON LABS
Chameleon is a relatively new company with the strap line "Value Conscious Audio." It makes a selection of audio products, including the TS-1 Tube Pencil condenser microphone, and the TS-2 large diaphragm tube condenser microphone.
www.chameleonlabs.com

CHARTEROAK ACOUSTICS
Founded by producer/ engineer Michael Deming in Connecticut in 2002, CharterOak is all about creating the classic microphones of tomorrow. All tube and solid state microphones are assembled and inspected by hand, with each being studio tested before shipping to the customer.
www.charteroakacoustics.com

COLES ELECTROACOUSTICS
Coles in Hertfordshire continues to manufacture the BBC-designed ribbon microphones that include the ever-popular 4038.
www.coleselectroacoustics.com

COUNTRYMAN ASSOCIATES
With more than 30 years of experience, Countryman Associates manufactures microphones for a variety of live applications including theatre, presentation and live music. The range consists of a number of mini and micro microphones for these situations.
www.countryman.com

CROWN
From humble beginnings back in 1947 through radio enthusiast Clarence C. Moore, Crown has grown into a company manufacturing products across the whole pro audio spectrum. Its microphone range includes models that encompass the pro audio world. These include Boundary, PZM, Lectern, mini, as well as conventional studio microphones.
www.crownaudio.com

DPA MICROPHONES

In 1992, Danish company Bruel and Kjaier took the decision to spin off its pro audio division and outsource sales and service of its 4000 series microphones to the former employees that designed them. It formed Danish Pro Audio and since 1994 has introduced new products into its line. These include mini, compact, large diaphragm and reference test microphones, and also the only phantom powered underwater microphone, the P48 Hydrophone.
www.dpamicrophones.com

EARTHWORKS AUDIO
Formed in New Hampshire by David Blackmer, the inventor and founder of dbx, Earthworks Audio looks to develop the next generation of audio products, including microphones with its High Definition Microphone range. Both general use and instrument specific microphones are designed to pick up sound with much higher fidelity than conventional designs.
www.earthworksaudio.com

ELATION
Many decades of research and development have led Russian company Elation to manufacture its own microphones. Limited to a single large and single small diaphragm condenser microphone, and bass drum mic.
www.elation-mics.com

ELECTROVOICE
Electrovoice has been developing pro audio products principally in the area of sound reinforcement for over 80 years. Its microphone range illustrates this orientation in both its standard and wireless microphone products.
www.electrovoice.com

FOSTEX
Founded by the Foster Electronic Company in Tokyo back in 1973, initially to deliver high quality speaker components to customers for Foster, which was well established in the development of transducer technologies. Fostex has come to establish itself in location recording and broadcast audio applications, with a number of mics for these areas.
www.fostex.com

GROOVE TUBES
Formed in California in the late 1970s by Aspen Pittman, who gathered together some technicians to explore why it was that tubes performed and sounded so different. From a garage workshop to a global company, Groove Tubes now produces a range of tube, FET and ribbon microphones that still includes the MD1.
www.groovetubes.com

HHB COMMUNICATIONS
HHB entered the mic market with an innovative range of recording mics aimed at audio journalists and field recordists.
In collaboration with Sennheiser, HHB now has a range of devices with various options, including the increasingly popular FlashMic.
www.hhb.co.uk

HEBDEN SOUND
Since 2003, Sheffield-based Hebden Sound Ltd has supplied the HS3000 series of interchangeable capsule microphones, which are still only available directly from Hebden Sound.
www.hebdensound.com

HEIL SOUND
The origins of Heil Sound date back to the 1950s when organist Bob Heil, began to mentally dissect the sounds around him. Heil began to experiment with design and manufacture of organs. He then transferred his experience to other musical forms with great success. The 90s saw Heil move into the microphone market with the HC series, and now Heil has a range that leans towards live applications.
www.heilsound.com

HOLOPHONE
Musician and sound designer Michael Godfrey founded Holophone in Toronto, Canada, in 1994 looking to deliver the most realistic listening experience from recorded audio. Holophone has a number of microphone products that can accommodate surround applications.
www.holophone.com

HORCH AUDIO

German company Horch Audio manufactures three retro styled tube microphones, the RM3, RM4 and RM2J for high-end recording work.
www.horchaudio.de

JJLABS
Started in Stockolm by Johan and Jerker Antoni in 2000, JJLabs has a comprehensive range of tube, ribbon, and conventional condenser and dynamic microphones. It also has the unique Ehrlund triangle membrane condenser microphone designed to deliver the desirable traits from both small and large diaphragm condensers.
www.jjlabs.se

JOEMEEK
Referencing many of the experiments made by Joe Meek in the early to mid 1960s, Joemeek continues to provide cost effective solutions for project and pro audio, with a range of general purpose small and large diaphragm condenser and dynamic microphones.
www.joemeek.com

JOSEPHSON ENGINEERING
Since 1998 Josephson Engineering, as well as producing and supplying capsules to other microphone manufacturers, has produced its own range of microphones for studio, location, live and instrument specific applications.
www.josephson.com

JZ MICROPHONES
Over the past decade, Latvian manufacturing company Scruples ventured into the pro audio market with products including mics under the Violet brand. Scruples created a spin off company, JZ Microphones, that has now been established to concentrate on microphone development.
www.jzmic.com

KATAMOUNT ENTERPRISES
Katamount Enterprises was established in Canada in 1999 as a distribution company for post and broadcast, but now manufactures its own products including its KAT66 Lavalier mics.
www.katamount.com

LAUTEN AUDIO
Founded by Brian A Loudenslager, Lauten Audio is committed to producing high-end microphones with an 'original sound'. Loudenslager worked with some of the biggest microphone brands in the world before forming the company whose ethic now is to design mics that present an accurate rendition of the source while adding an artistic character of its own. Its line-up comprises the Oceanus, Clarion, Torch, and Horizon.
www.lautenaudio.com

LAWSON MICROPHONES
Founded by Gene Lawson in 1979, and now hand crafted in Nashville, Lawson Microphones' range of award winning high end tube and FET microphones, with their distinctive look, are desired the world over.
www.lawsonmicrophones.com

MANLEY LABORATORIES
Since 1989, and now out in Chino California, Manley Laboratories has focused on the development of a number of products based on tube designs. Amongst these are the range of Manley tube microphones, which include the Manley stereo tube reference microphone.
www.manleylabs.com

M-AUDIO
Formed in 1988, and now part of the Avid Technologies, M-Audio is focused on computer based products and those aimed to provide solutions to mobile musicians. The M-Audio microphone selection includes a number of general-purpose units including the lollipop large diaphragm condenser, Luna.
www.m-audio.com

MBHO
Established in Obrighelm in 1962 by Herbert Haun, MBHO has been producing high quality microphones ever since. Ninety five percent of the MBHO range is still handmade and includes both modular and fixed capsule condenser and dynamic microphones.
www.mbho.de

MERCENARY AUDIO
The straight-talking team at Mercenary Audio are all engineers who sell an impressive array of high-end audio equipment. They also manufacture the KM-69, born out of a need for a KM-84i for hi-hats. The sound of the mic was created over time solely by listening and using, and was designed to a particular aesthetic end rather than a set of numeric specifications.
www.mercenary.com

MICROTECH GEFELL
The origins of Microtech Gefell can be traced back to 1928 when one Georg Neumann and colleague Erich Rickmann formed Georg Neumann and Co. In 1943, production moved to Gefell, where many years of developing and producing some classic products took place. The range of Microtech Gefell microphones is extensive and draws from this history.
www.microtechgefell.de

MICW

Designed, developed, and manufactured by BSWA Technology, the MicW brand delivers professional microphones for recording, broadcasting, and live music applications. MicW was established in 1998 and claims to be the first company to introduce the electro-static transit response technique for microphone evaluation, as well as instigators in the use of polymer diaphragms for measuring microphone structures.
www.mic-w.com

MILAB MICROPHONES
The Milab story begins in 1941 with Rune Rosander producing crystals, and then subsequently carbon and dynamic mics. In the late 1960s, the rectangular capsule and double-sided rectangular capsule were developed and are still produced today. The name Milab came into being in 1970 and now Milab manufactures a full range of microphones including the brand new BDM-01 bass drum microphone.
www.milabmic.com

MOJAVE AUDIO
David Royer established Mojave Audio in his garage in Fullerton California in 1985. Known for his ribbon microphone designs with Royer Labs, Mojave Audio is the outlet for David Royer's tube microphone designs.
www.mojaveaudio.com

MXL MICROPHONES
MXL Microphones are designed and manufactured by US-based manufacturers Marshall Electronics. The brand has a variety of standard microphone types aimed at the expanding 'cost-effective' market for good quality products.
www.mxlmics.com

NADY SYSTEMS INC
Founded by John Nady in 1976, Nady Systems Inc was, and remains, at the forefront of wireless mic design. Nady was amongst the first to address the issues of noise reduction in wireless systems and, by 1985, eighty percent of the world's top artists were using Nady systems.Nady has branched out and now includes a comprehensive range of studio condenser, ribbon, instrument specific, and USB mics.
www.nady.com

NEUMANN
With roots going back to Berlin in 1928, Neumann has been involved in the design and manufacture of a wide range of audio products, but it is with microphones that the name is most associated. Neumann became part of the Sennheiser group in 1991, and this branch of Neumann is focused on continuing its long tradition of high quality industry wide microphones.
www.neumann.com

OKTAVA
For many years, being the largest manufacturer of electro-acoustic transducers in Russia has given Octava a great background for producing their own microphone range. This is now a large collection of tube, ribbon, electret, and conventional microphones for all manner of studio applications.
www.oktava-online.com

PEARL MICROPHONES
Pearl shares the same origins as Milab and owes much to the designs of Rune Rosander. Based in Sweden, Pearl produces a number of conventional and tube mics.
www.pearl.se

PEAVEY
After graduating college in 1965, Hartley Peavey started his company using the logo he came up with while doodling in his notebook. Peavey's products are known the world over and have mic units for use in the studio, speciality, and sound reinforcement market.
www.peavey.com

PELUSO MICROPHONE LAB
All Peluso mics are custom designed, handcrafted, and individually tested in Virginia. The range features tube, ribbon, and solid state versions that benefit from the company's 26 years of experience in repairing and restoring all brands of vintage and modern microphones. Furthermore, all mics are protected by a three year warranty for peace of mind.
www.pelusomicrophonelab.com

RED MICROPHONES
As a spin off from the Latvian manufactured Californian based Blue Microphone Company, Red Microphones' pedigree is a good one. The company offers the Type A tube and Type B solid-state lollipop style microphones with interchangeable capsules.
www.redmic.com

RICSONIX
Based in Australia, Ricsonix manufactures several pin/button microphones designed to be hidden behind a button or badge. The MITS-2 features a built in windshield.
www.ricsonix.com

RODE MICROPHONES
Rode came into existence after Henry and Astrid Freeman emigrated from Sweden to Australia in 1967. Their background in audio product development within their own Freeman Group of companies led to the development and release of the first Rode Microphone in 1990.

The Rode range has grown in number and reputation since then, with quality, affordable tube and conventional microphones for broadcast and studio use.
www.rodemic.com

ROYER LABS
Formed in 1998 to bring David Royer's ribbon designs to the world, Royer produces a wide and respective range of ribbons that include unique tube and phantom powered ribbon microphones.
www.royerlabs.com

SAGE ELECTRONICS
Sage Electronics was founded in 2002, and is operated by long-time record producer Phillip Victor Bova, his wife Janet Kirby and their son Philip Shaw Bova. It produces a number of pro audio products that includes the SE-BB1 Bova Ball Spherically mounted condenser microphone.
www.sageelectronics.com

microphones 2009

SAMSON
Samson began 26 years ago designing and producing wireless mic systems. Since then Samson has diversified into a number of areas of audio equipment production that includes a large number of conventional, ribbon, and USB microphones.
www.samsontech.com

SANKEN MICROPHONES
Sanken Microphones is based in Tokyo and has focused on producing simple original condenser and dynamic microphone designs for studio, broadcast, and live use since 1926.
www.sanken-mic.com

SCHERTLER
Schertler started life in the early 1980s in Switzerland with a mission to produce mics for faithful capturing of acoustic string instruments. Schertler now has a well-established and comprehensive range of contact microphones for a cross section of acoustic string instruments.
www.schertler.com

SCHOEPS
Founded in 1948 by Dr Schoeps, the company has specialised in the design and manufacture of high quality condenser microphones for over half a century. The Schoeps range is now an extensive one with condenser solutions for all manner of studio, broadcast, live, and location scenarios, as well as surround applications.
www.schoeps.de

SD SYSTEMS
A group of sax players banded together to create a mic able to capture their instrument while facilitating stage freedom. In 1981 SD Systems was born with the bell-mounted solution that they developed, the LCM85. The SD Systems microphone range now encompasses mini and contact mics for a wide range of instruments.
www.sdsystems.com

SE ELECTRONICS
The origins of sE Electronics are with Mr Siwei Zou, a classical musician from Shanghai who developed products in Shanghai before entering the European market in 2003. The mic product line includes tube, ribbon, modular and conventional microphones. The company's newest addition, the RNR1 active ribbon microphone, is the fruit of a joint collaboration with Rupert Neve.
www.seelectronics.com

SENNHEISER

Sennheiser has been delivering top of the line pro audio for more than 50 years, providing the backbone of many studios' microphone cabinets, whether it be music, broadcast, post, live, or location. Sennheiser has a microphone range that is truly diverse covering every nook and cranny of the industry.
www.sennheiser.co.uk

SHURE

Founded in Chicago in 1925 selling radio parts, Shure produced its first microphone in 1932 and has not looked back. It now has a collection of wired and wireless mics including the ubiquitous SM58. More recently Shure Inc. has acquired Crowley and Tripp Ribbon Microphones from Soundwave Research Laboratories.
www.shure.com

SONTRONICS
Designed and developed in the UK and hand crafted in Shanghai, Sontronics produces uncompromising high performance microphones at affordable prices. The range includes the distinctive condenser, tube, and ribbon designs.
www.sontronics.com

SONY
Sony has a long history when it comes to microphones and has produced a few classics in its time both old and new. The current range reflects Sony's continued involvement in all pro audio arenas.
www.sonybiz.net

SOUNDFIELD

Based in the UK and formed in 1993, Soundfield Limited manufactures and continues to develop its unique multi capsule tetrahedral design for both enhanced stereo and multi-channel applications.
www.soundfield.com

SOUNDKING
The Soundking Group Ltd of China specialises in the research and development of a variety of products in pro audio. In the microphone category, it has a wide range of mic types and kits.
www.soundking.com

SOUNDMAN
Headquartered in Berlin and founded in 2001, Soundman have developed the OKM dummy head microphone. An electret condenser microphone for use in live, voice, and other environmental recording applications. The company also produces the OKM II Rock Studio version.
www.soundman.de

STUDIO PROJECTS

In conjunction with partner company 797 Audio, US-based Studio Projects looks to provide a quality general purpose microphone product with German type build standards at a fraction of the cost. The company has recently released the CS series of studio microphones..
www.studioprojectsusa.com

SYMPHOTEC
German company Symphotec set about designing a microphone specifically for the purpose of producing a better, more faithful, reproduction of orchestral and concert hall presentations. This resulted in the Symphotec Orchestral Management System.
www.symphotec.de

T.H.E
Based in Connecticut, Taylor Hohendahl Engineering produces beautifully crafted microphones designed by Andy Hohendahl. The range includes reference condensers, modular mics, and a binaural sphere.
www.theaudio.com

TRAM LAVALIERS
TRAM manufacturers the famous TR-50 lavalier omni-directional mic, which comes with a huge range of accessories for many different configurations and mountings.
www.tram-usa.com

TRANTEC
Based in London and running now for over a decade, Trantec was formed by Steve Baker, Dave Binks and Terry Maybe, who developed and subsequently specialised in wireless mic solutions. Trantec now supply to broadcast and theatre clients. The Trantec range includes the SD7000 digital wireless.
www.trantec.co.uk

TRINNOV AUDIO
Trinnov Audio specialises in the digital processing of acoustic fields. Trinnov has produced the SRP Surround array of microphones, based on a breakthrough special high resolution technology.
www.trinnov.com

VIOLET DESIGN

Violet has been developing and manufacturing in Latvia since 2003, where it produces a range of distinctive and colourful microphones – a combination of tube, solid-state, large and small diaphragm condensers.
www.violet-design.com

VOICE TECHNOLOGIES
Voice Technologies is focused on mics for use in broadcast, theatre, film, video, and conference applications. A range of miniature lavaliers and headset mics are available.
www.voicetechnologies.net

WUNDER AUDIO
Wunder Audio has come from refurbishing vintage equipment to producing products that give a big nod to past classics. Wunder produces handmade transformers for all of its products including a range of high-end tube mics.
www.wunderaudio.com

XXL INSIDE
XXL supplied technical services to some of the top names in the audio sector before venturing into production. XXL's mic collection includes studio condenser and dynamic, miniature lavalier, and headset microphones.
www.xxlinside.com

ZAXCOM
Known primarily for its Deva location recorders and digital wireless systems, Zaxcom produces the ZFR800 handheld digital recording mic for field recording and broadcast journalism applications.
www.zaxcom.com

Microphone Basics

The foundation of good microphone practice is technical knowledge. Blažo Guzina provides a run-down of the basics for anybody just getting to grips with the wibbly bits...

Microphones have different overall physical and electrical characteristics and are classifiable into three main groups, based on the physical principle of converting sound into an electrical signal: electrodynamic coil, electrodynamic ribbon, and electrostatic (or condenser) microphones.

Dynamic Microphone

The electrodynamic moving-coil microphone has a coil of finely wrapped wire precisely suspended between the poles of a magnet and attached to a diaphragm. Soundwaves drive the diaphragm, which vibrates in a high-level magnetic field. In the coil, this movement induces a voltage, which corresponds to the sound pressure.

Dynamic microphones are very rugged and handle high sound pressures without overloading. They are reliable and virtually never distort the sound signal. They are insensitive to extreme heat, cold, and high air humidity. Dynamic microphones can usually withstand extreme environmental conditions such as temperatures from -25°C to +70°C.

Ribbon Microphone

The electrodynamic ribbon mic has a thin metal foil in the form of a corrugated ribbon suspended in a magnetic field. Sound pressure variations displace the diaphragm, in which an electrical current is induced depending on the amplitude and frequency of sound. Due to the short length of the ribbon compared to the moving coil, its output electrical impedance is less than 1 Ω. This resistance is too low to directly connect to the microphone input of a mixing desk or recorder, so a step-up transformer is needed to increase the impedance up to the 150Ω to 600Ω range.

Due to constructional improvements, modern ribbon mics are suitable for outdoor and handheld use. They are prized for their warm, smooth, yet delicate sound quality.

Condenser Microphone

The electrostatic (condenser) microphone uses a transducer element consisting of a vibrating diaphragm (very thin foil) and a fixed metal plate (back electrode).

These two electrodes make up a condenser (capacitor) charged by an externally applied voltage (polarization voltage) or carrying its own permanent electrical charge, as with an electret microphone.

When soundwaves vibrate the diaphragm, the capacitance of the condenser changes simultaneously, thus producing an output voltage that varies with the intensity and frequency of the sound.

Condenser microphones usually have a flat frequency response, high sensitivity and good ability to follow sudden, percussive sound events immediately. This is described as good transient response.

Condenser microphones require an impedance converter in the form of a preamplifier to match the very high output impedance to low impedance microphone inputs. This amplifier fits within the body of the microphone in order to prevent hum, noise pickup and the losses of the signal level due to the length of the circuit from the diaphragm to the amplifier.

Phantom Power

Condenser microphones need a DC supply voltage. Except for battery operated microphones, the voltage usually comes through the microphone cable. The positive (+) side of a DC voltage connects to both signal wires of a balanced line and the negative (ñ) side to the cable screen.

An exception is the electret condenser microphone. This type of microphone has the polarizing charge stored permanently within the diaphragm or on the backplate. No external power is required to charge the diaphragm.

Polar Patterns

Apart from the basic differences in the physical principle of operation, the main factor that influences the choice of a microphone is its polar pattern.

Polar pattern, also known also as polar response, is a chart that graphically represents microphone sensitivity with respect to the direction of soundwaves arriving at its membrane.

A chart is usually plotted in the form of a 360° polar diagram, with the on-axis 0° direction clearly marked. It is possible to classify microphones into two main groups, based on their directional characteristics: non-directional and directional microphones.

In principle, a non-directional microphone is a pressure-operated electroacoustic transducer. Its response to acoustic sound pressure is omnidirectional, meaning that the diaphragm reacts equally to all soundwaves arriving at its surface, regardless of their direction.

A typical example of a directional microphone is a pressure-gradient transducer. This type has a bidirectional (or figure-of-eight) polar diagram. This means the microphone reacts to differences in pressure between the two sides of a diaphragm.

Ribbon microphones are the most common type with a bidirectional polar response. A metal ribbon diaphragm is equally sensitive to soundwaves arriving from front and rear axes.

All other known directional patterns are obtainable as a result of a combination of the aforementioned two main polar pattern types. The number of variations is practically unlimited.

When the outputs of an omnidirectional (pressure) and bidirectional (pressure-gradient) pickup pattern are combined, the best known resulting polar responses that are obtainable are cardioid, supercardioid, and hypercardioid. Their common name is unidirectional microphones.

A unidirectional microphone is most sensitive to soundwaves arriving from one direction, in front of the microphone, but softens sounds from the sides or rear.

The cardioid microphone is sensitive to sounds from a broad angle in front of the microphone. Generally, it is about 6dB less sensitive at the sides, at 90° and 270°, and 15 to 25dB less sensitive to the rear.

New from Rycote

Softie Windshield System New & Improved!

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Slip-on windshield now available in Standard (19-22mm) and Large (25mm) diameters, in a variety of lengths suitable for most shotgun microphones.

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Acoustic Foam Windshields

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Mini Windjammers
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Rycote Microphone Windshields Ltd Libby's Drive, Slad Road, Stroud, Gloucestershire, GL5 1RN, UK
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